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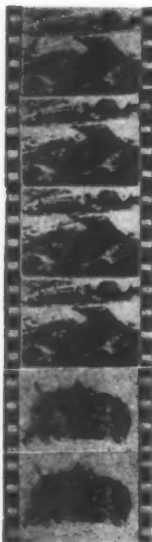
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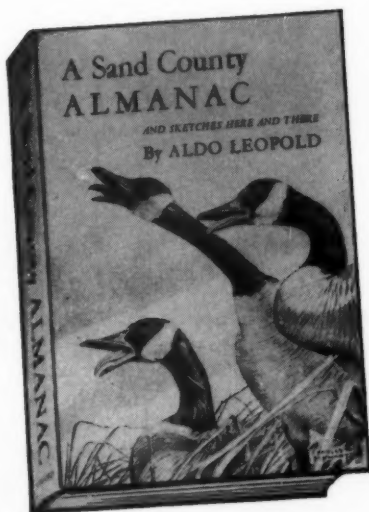
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NATURE AND C

By Alan Devoe

Christmas time has come around again; and the least religious-minded of us must be touched, in this season, with a concern for everlasting things.

When I was a boy in Sunday School, I used to find it very hard to listen attentively. All those "begats" and "verilys" and "amens"—all that fantastic business about burning bushes, and "sin," and Solomon in all his glory, and all the rest of it—what did this have to do with the real world, of which I could catch glimpses through the church window? Out there was the world I loved: the world of sunlight and moonlight, catbird nests in the blackberry tangle and muskrats swimming in the creek, the world that smelled gloriously of earth, rain, and swamps and pine trees.

"And being in Bethany in the house of Simon . . ."

I would crane my neck to watch the gray squirrel scam

ND CHRISTMAS


Devot pering up the oak just outside the window, and neither Bethany nor Simon was much more than a kind of droning nuisance to be endured.

A great many of us, I imagine, go on feeling like that about the Christian story for most of our lives. We are left with a lasting feeling that there is a sort of *stuffiness* about it, an irrelevance to the sunlit nature-world. We think of a story, full of improbable marvels, and all bestrewn with meaningless ancient figures named Mephibosheth and Amalek and Hadadezer and the like, and we cannot think that this dusty recital has any bearing upon the real world in which we delight to watch warbler-migrations, and taste spring-water, and feel the good feel of the sun.

"I believe," said Thoreau, "in the forest, and in the meadow, and in the night in which the corn grows." Our hearts warm to that spontaneous nature-creed; and we will dispense, thank you, with Mizraim and Anamim and Lehabim and all the rest of that far-away, unlikely lot.



GARDELL
DANO
CHRISTENSEN



Now the Bible story does contain, undoubtedly, a vast lot of ancient history, shaky as to accuracy, and zero as to interest. Furthermore it contains, clearly enough, a great deal that is to be read as poetry, as symbolism. These things being cheerfully conceded, there stands forth a central and unshaken fact that would have astonished me immeasurably as a boy: to wit, that the Christian story, in its essential outline and essence, is exactly a religion *for* naturists. It says in its more tremendous way exactly what *we* say. It is not a religion of stuffiness, but to a scarcely realized extent a religion of the open air. All that buzz-buzz of strange names and queer old kings, in our childhood, fooled us. What Christianity is really all about, in the huge entity of the story from man's creation to his redemption, is just exactly this: man's first creaturely aloneness in nature; his loss through pride of that felicity; and his being saved by One who was—of all simple, earth-close, robustly rustic things—a country carpenter.

It would be too bad, it seems to me, as we go hiking among the snow-boughed evergreens, listening to juncos and chickadees, breathing the pine-smell, thinking our nature-thoughts, if any of us were to be deceived into supposing that there is a gulf between these devotions of ours and the Christian devotion. They are the same devotion. Never mind old Amalek and Hadadezer. The central Christian truth is relevant here, relevant to the pines and the cedars and the chickadees, and to what is in our hearts.

The Christian story talks about Adam; it is talking about you and me. We all start out in a Garden; every child does. We start out, that is, in an enchanted wonderment at the world, and an almost aching gratitude. How unutterably splendid that there should be such a thing as the forest, now hushed and white in winter, now all a leafing miracle of summer green, now smelling of rain and leaf-mold in the spring! What an enchantment that brooks make the sound they do, and that there should be a small wonderful something called a deer mouse—all snowy and tawny and twinkly-whiskery—and that the geese should make that splendid honking as they fly.

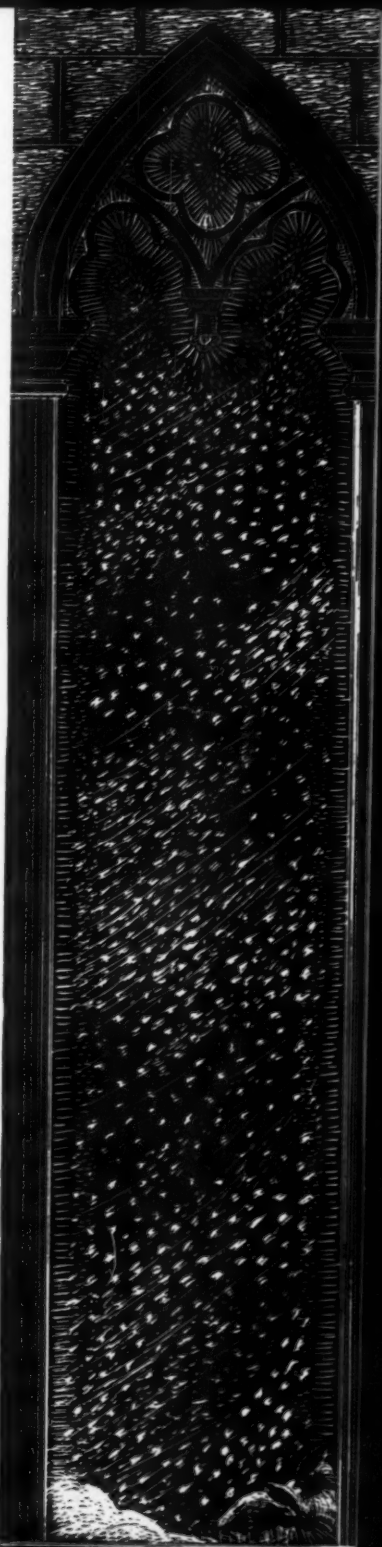
We all start out in this Garden of glad gratitude. And, of course—how well and sadly we know it—we all lose the way, and lose the Garden. Our concern turns inward, in pride. We get lost in a long futility of trying to be masters, instead of creatures and enjoyers. We bustle about our self-centered little enterprises, and the power-plants get built and the factory-whistles scream triumphantly and the saw-mills roar; and all of a sudden, behold, the forest is gone and the clear brook runs poisoned with dye and we have got a few dollars in the bank and a great emptiness inside us. It is not only that the external Garden has been despoiled, in our thoughtless pride. The Garden is also a

state of mind and spirit; and we have lost it. We have forgotten how to hear the geese, honking and crying. Anemone and dogtooth violet do not bloom for us as once they did, in childhood springtimes; for we have lost the gift of seeing and loving them. When the snows of Christmas lie over the land, we are but vexed to need overshoes; for we cannot see any more the magic of this whiteness, or smell the pungence of the cedars in the frosty air, or hear the tinkling of the chickadees as the flakes come down. It is exact, most terribly exact, to say that we are exiled.

In the Christian story, what manner of Figure came to rescue us from this bitter loneliness and restore us? A ponderous philosopher, spouting syllogisms? A mighty and stately personage, a king? No, not a philosopher. No, not a king, except in the special and extraordinary sense of one whose kingdom is wholly of the spirit. He was a country man, a village carpenter, a comrade to men who went fishing and who were farmers. He talked of wildflowers, crops, weathers. He made parables of a calf, of the grinding of corn, of vineyard-tending and grass and sparrows. He spoke in the idiom of earth. And he said, with a terrible simplicity, that we were to be saved not by any sort of complicated thinking, or any sort of stiff ritualizing and prescribed behavior, but by becoming, each of us, as a little child again.

At Christmas we commemorate the coming of the One who talked like this. We may have different views amongst us as to how much of the story is historically real. We may have differences as to details of observance. But no naturalist in the whole lot of us can fail to respond, with the deepest certainty of the heart, to the great thematic truth that the Christian story speaks. It is not a story, except in the most accidental and unimportant way, about Mephibosheth or Hadadezer. It is a story about you and me, and about the gift of wonder and love, and how we lose it, and how we may become healed and whole again. When we go out at Christmas-time, now, and cherish a chickadee or exult in the snow, we are making in a very real way a commemoration. When we hush and humble ourselves a little, and grow for a minute or two in grateful surprise at the fact of a snow-laden cedar, what we are doing—though it would have astonished me to hear so as a boy—is following a crucial Christian commandment.

Christmas is a Christian season, and also a nature-season, and the two go hand in hand. We may go to a variety of churches, and some of us may not go to any. But in a profound sense all of us, whenever we stop taking the earth for granted, whenever we halt for a moment's praise on a frosty mountain-top or a moment's passionate rejoicing in the loveliness of a snow-crystal, are joined together in the tremendous fellowship of Christmas.



A concluding article in which the author tells about tiny tropical kingfishers, an eagle owl, the songs of Javanese birds, and an enormous flight of fruit bats.

Birds in JAVA

By **Charlton Ogburn, Jr.**

THE small birds of Java are an inexhaustible treasure—jewelled kingfishers that Europeans are familiar with but that amaze Americans—mites with bodies smaller than your thumb but with all the characteristics and solemn deportment of their grown-up cousins and with colors of turquoise, amethyst and coral—golden-backed woodpeckers, like small, gilded pileateds—black drongos which appear three parts flycatcher and one part crow, with long tails curling out on either side at the tip.

The one Javanese passerine bird I had expected to recognize at once, how-

The rugged, forested, south coast of Java (upper) photographed by A. Hoogerwerf.

A golden-yellow, black-naped oriole (upper right) sings its golden, flutelike notes from the brush-growth and treetops. Photograph by the author.

In Java, travelers may hear a multitude of strange bird voices issuing from the tree- and shrub-lined roadsides. Photograph courtesy The Netherlands Information Bureau.

A
ever, I sought in vain for several months—the Java ricebird, the plump gray finch with white cheeks and a pink bill like a cardinal's, much favored by bird-dealers. As is sometimes the case with birds, it turned up finally in the most unpromising circumstances that could be imagined—at ten o'clock at night in the pavilion of the palace of Hamangku Buwono VII, Sultan of Jogjakarta, at the capital of the Republic. I was one of an audience of several hundred for whom a performance of Javanese dances was being given when the lone ricebird





Northwest coast of Java photographed by A. Hoogerwerf.

appeared among the rafters. He remained, flitting from one to another, for the duration, lending the scene a good deal more animation than did the Jogja dancers, whose art emphasizes restraint.

The birds that do throng the rice fields around Batavia are the mannikins, especially the white-breasted mannikin, of black head and chocolate upperparts, which is also popular with American bird-dealers as the "nun." The various species of mannikins have the large-headed, stout-beaked, stocky weaver-finch build and are all under five inches. They are regarded with trepidation by the rice-growers. Cords hung with strips of cloth are strung across the paddy fields on bamboo poles and are shaken to frighten off the depredatory flocks—with small effect, I judge, for when the rice is in the milk, little naked boys with broad-brimmed hats are required to go paddling out into the fields to "shoosh" the mannikins away. The flocks of little birds rise before them and settle in another part of the field with what must be to the citizens of the kampong a maddening insouciance.

After the Brahmany kite, the commonest hawk along the Tangerang Road was

the white kite (*Elanus caeruleus*), a close relative of our white-tailed kite, which it closely resembles. With its long wings and long tail, its flight is exceptionally light and graceful, between that of a falcon and that of a small gull. It hunts over the rice fields, frequently hovering like a sparrow hawk before swooping on its prey.

Peregrines, probably winter visitors from northern Asia, also occasionally appeared, presumably attracted to the rice-fields by the wintering shore birds. One which I saw attacked by a peregrine at a considerable altitude—a snipe-like bird in its erratic flight—managed to gain cover despite the handicap of its position by dodging each of the peregrine's thunderbolt stoops; it was, in fact, difficult to see how such a target could ever be struck.

More singularly, I once saw a peregrine itself under prolonged and energetic attack—and by a white kite. The latter employed the peregrine's own technique, diving with folded wings, reaching its talons out just before it struck and, grazing the mark, recovering its pitch with a steep climb to renew the attack. Bird psychology is to me un-

fathomable. Undoubtedly the larger and more powerful peregrine could readily have outdistanced the kite, or even have reversed the roles. But she refused to extend herself. Instead, every time the kite stooped she would scream resentfully and, turning completely over on her back in the air—warding the kite off with outstretched talons—a performance that was repeated fully 15 times before the kite abandoned the pursuit.

With 700 to 800 human inhabitants per square mile, Java is the most densely populated country in the world and probably one of the most intensively cultivated. In the lowlands the aboriginal forest has vanished. The giant trees of the Buitenzorg botanical gardens may afford some hint, however, of what that forest was like and of its avifauna.

In these magnificent gardens, it is, of course, the birds of the open that first attract your attention—the swifts, bulbuls, starlings and kingfishers. Dyal



One kind of Java ibis looks like our American wood ibis. Photograph by A. Hoogerwerf.

thrushes frequent the grassy spaces, resembling mockingbirds in formal black-and-white plumage, spirited in movement and, like robins, precise and military in bearing. A closer relative of our robin favoring the same habitat is the orange-headed thrush of the genus *Geokichla*, in which the gray and blackish hues of the robin are softened to a uni-

Mannikins, especially the white-breasted mannikin, popular with American cage-bird dealers, throng the rice fields around Batavia. Photograph courtesy The Netherlands Information Bureau.





The greater green leafbird, a forest dweller, is solid green except for the black throat-feathers worn by the male. Photograph by the author.

form bluish suede and the brick-red of the robin's underparts transformed to an apricot color which encompasses the head. It is odd to see a bird combining the general build and proclivities of a robin with the soft and dreamy quality of a bluebird as the orange-headed thrush does, its large, dark eyes seeming always about to brim over with tears.

A multitude of bird voices issues from behind the matted shrub-growth and from the treetops. Among them, the song that captures the attention is that of the black-naped oriole, a large and golden-yellow member of the true oriole family of the old world. The song is short and beside the extended performances of the dyals and bulbuls is to be compared to a six-note finger exercise, the alternate notes sharply ascending the scale, those intervening falling back a tone or two. It can be imitated with poor fidelity if you whistle with your jaw lowered as far as possible, using your tongue as a stop. A comparison for the rich and reverberant tone of the notes of the black-naped oriole is impossible to find, however. Sounding from the dome of one of those mighty, buttressed trees, mingled with the dripping of the foliage from the last rain, the golden, flute-like notes of that golden bird, unmuted by distance, evoke the mood in which one first read Hudson's "Green Mansions." It is as if some forest being,

to whose voice humanity has long been deaf, were calling from a world before time began.

Of the other songs, my chief impression is frustration. In the distant wilderness of the treetops it was usually impossible to trace the singer, while the birds of the brush growth were mad-deningly elusive. Everyone familiar with the tropics knows what it is like to try to track down a bird from bush to tree and back to bush, a bird which for a long time consists of a disembodied song, insistent, provocative, repetitive and generally within a few score feet. You take shelter under a leaning tree trunk from a monsoon thunderstorm, and when the sun breaks through your song begins again and you resume the hunt. Finally you begin to catch glimpses of the restless, shadowy little shape. Generally at this point the song ceases, and that's that. With great luck you will get one full clear image of the singer. He turns out to be brown above and gray below and could belong to any of half-a-dozen families all impossible to connect with any new world category. Under these circumstances you begin to welcome the familiar—a great titmouse, which is common as close to home as England and is comfortingly reminiscent of a chickadee; or a velvet-fronted nuthatch scurrying around a tree trunk as if its time on earth were short and which, but for the

patch of black velvet affixed to its forehead, would not be out of place on your suet-holder.

Once, attracted by the hoarse cries of a pair of large-billed ravens and the screams of bulbuls, I detected a Malay eagle owl in the depths of a tree. This owl, of the always impressive genus *Bubo*, like our great horned owl, has enormous talons and an aquiline beak.

plumage they are like nothing in the new world—except the parrots. One whose tropical experience has been confined to Latin America is likely to assume that the small green flocks speeding over the outskirts of the city or sprinting from treetop to treetop as in the botanical gardens, are in fact parrots. It is as if a definite place exists in tropical forests for stout, green, arboreal, fruit-eating birds with red, yellow, blue and gray on their heads and breasts, and it merely happens that in the western hemisphere it is occupied by *Psittacidae* and in the eastern by *Columbidae*. Once I studied a black-naped fruit dove in a shrub for some moments, observing its large, light gray head, black crown, green wings and mantle, and its upright posture under the impression—its face being hidden—that it was in fact a parrot. The similarity between these two groups does not extend to temperament, however. When a flock of these arboreal pigeons hits a tree, far from setting up a circus like parrots, it simply vanishes.

Wherever you find a full grown specimen of one of the giant native trees you have a fragment of the forest—even among the quadrangles of the Hotel des Indes, where a number of waringins with trunks formed of aerial roots, like

The predominant herons are the egrets (left). The lesser (a smaller version of the American egret) snowy, and cattle egrets are most abundant. Photograph by A. Hoogerwerf. The striped button quail (below), photographed by the author, is only about four inches long; the male (left) is smaller and paler than the female.

Turning its attention from its assailants, it looked squarely at me. To have an owl look you unblinkingly in the face always gives you a jolt. An eagle owl, whose face has the appearance of a visage on a totem pole, delivers a voltage second to none.

Of the birds that give the Buitenzorg gardens their character, the green pigeons and fruit doves should have been mentioned first rather than last. In



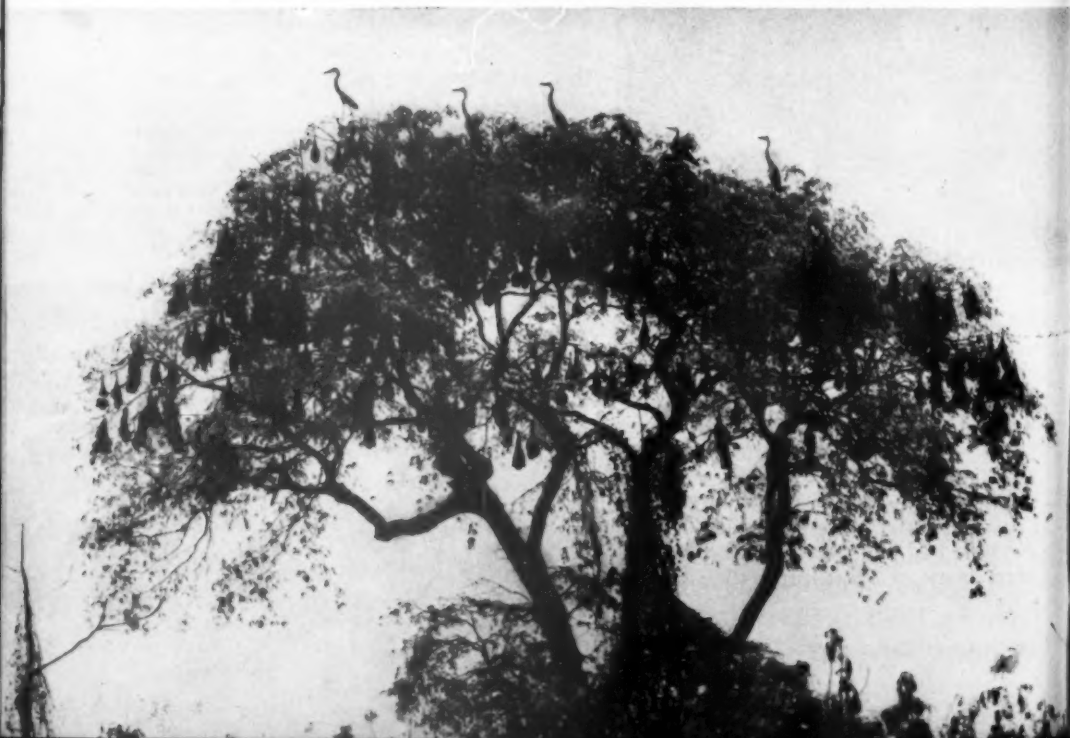
banyans, hold their canopied branches high above the roofs. A complete avifauna had its existence in the foliage of these trees, not to mention gecko lizards, like baby alligators, that would wake one from the deepest sleep with their cry *TOK' EH . . . TOK' EH . . . tok' eh . . . tok' eh*, gradually subsiding like a bagpipe running out of air. I even found fruit doves in these trees, the males resembling Neapolitan ice cream, with pistachio predominating. These I discovered while lying on my back on the hood of a jeep in my perennial quest for the source of a song (if it could be called a song) of a monotony and persistence of which it seemed no bird could be capable. It was a soft *too-too-too-too-too-too*, delivered without emphasis, without hope, without meaning, and certainly without surcease—one of those sounds that could have come from a great distance or from inside one's head. Sometimes it came from two places at once,

the respective pitches a half-tone apart, which made it the more exasperating.

I should be ashamed to admit how long it took me to track it to its source. The perpetrator finally turned out to be a bird which dwelt exclusively in the treetops and which I had never seen—a crimson-breasted barbet, a chunky little beauty with brilliant crimson on the crown as on the breast and with yellow throat and cheeks and dark green upperparts. The barbets are said to be related to both the woodpeckers and kingfishers, to which they show their kinship in their prominent beaks. It was not until I had been in the mountains of Java and became acquainted with other members of this family that I began to appreciate them. Their sonorous rolling calls from the mountainsides are highly expressive of the misty forest reaches.

It was in the trees of the Hotel des Indes that for the first time in Java I

"The fruit bat . . . with its foxlike head and wingspread of three feet . . . seems to be of another world." Hanging head downward (below) like strange black gourds, the leathery-winged bats sleep through the day. (Right) Closeup of a single specimen. Photographs by A. Hoogerwerf.



saw fruit bats, or flying foxes. Java abounds in bats, bats like our little brown bats, bats only half as large, and silver bats. There are bats as big as screech owls that dash through your open window for a quick circuit of the room and out again, in that intermingling of nature with civilization that gives the tropics part of their appeal for those whose tastes incline that way.



But the fruit bat is like nothing in this world. Indeed, with its doglike or fox-like head and its wingspread of three feet, it seems more than any other animal to be of another world. Picture a flock of these bats outlined from your hotel window by a full moon, flapping around a waringin tree—and flapping is a term exactly descriptive of their flight—squeaking and gibbering, alighting with much shaking and rearrangement of their leathery wings, walking upside down among the terminal branches, which bend beneath their weight, and you have a sight worth traveling halfway around the world to behold, or to avoid, as some people would have it.

But even that is nothing compared with the flight of the fruit bats as it takes place over the Tangerang road

in February and March. Each evening as the sunset of the rainy monsoon reaches its climax—and it is like a conflagration against which the volcanoes of Gede and Salak stand out in purple—the fruit bats begin to appear out of the West, flying at between 50 and 200 feet. The style of flight is more suggestive of that of a night heron than of any other bird, but the effect is different—hypnotic and eerie.

A scattered few lead the grand procession. By the time a score or two are overhead you may raise your binoculars and behold a sight that will stir the hairs on your neck. In the reflected brilliance of the sunset, in what appears to be a belt endless at both extremities, the sky is peppered with the monstrous forms. Where tens of the giant bats were overhead a few moments before, soon there are hundreds and then thousands. From the whole expanse of the western horizon, as far as the eye can reach, come the bats. The flight must number in the tens of thousands. It is said that they are moving from their diurnal roost on an island west of Batavia to the regions inland where fruit trees are bearing. All I can say is that at the height of the movement there is no break in any direction in that evenly spaced multitude of bats. And still they come, each flying a straight course intent upon the objective, flying in dead silence, flying heavily but with a humping urgency—thousands upon thousands of enormous black bats.

Perhaps you can imagine this spectacle. But I doubt if it is possible to imagine, any more than I can describe, what it is like to have it unfold before you for the first time when you have never heard or read of such a thing and are wholly unprepared for it.

But then perhaps the same thing may be said about the other revelations every day brings of the inexhaustible richness and variety of life in a tropical country like Java.

By Louise de Kiriline

IN the fall of 1947 a blissful Indian summer lasted for weeks instead of a few short days. Night after night *Aurora borealis* wafted long undulating sheets of heavenly illumination across the skies, sometimes with the faintest tints of pink and green. In the forests around the Loghouse at Pimisi Bay here in northern Canada, every balsam, spruce, and tamarack, every pine and cedar tree, stood weighted down with enormous clusters

Winter

of cones in such abundance as I have never seen. That these circumstances in combination, especially the fruitful cones, gave promise of something unusual in the way of winter birds seemed to me an exciting possibility.

It began with the red-breasted nuthatches and the brown creepers. In other years only an occasional one of these birds stayed to pass the winter in this 46th latitude. But this time eight nuthatches and four brown creepers lingered on through those balmy days of autumn. When the black-capped chickadees, with their elfin fuss and chatter, attracted the nuthatches and creepers to the suet and peanut butter offered at my window, they abandoned all further urge to move on and remained to face whatever might be in store for them.

In November, small flocks of evening grosbeaks, which had been rare all summer, kept coming in from the north in the early mornings. Sometimes they would put the brakes on their swooping flight and with a ringing call come down, handsome and proud, to smudge their light-colored bills in the chlorided gravel of the highways. With them there were at times small groups of purple finches, mostly young ones with a faint rosy tint over their drab immature plumages. They said "tuck-tuck!" pecked the



Brown creeper

A bird-bander
reaps
the feathered harvest
of a
"tree-seed year."

Drawings by the author

Birds at the Lo

salt and ate the buds of the poplars, birches, and alder bushes in their spare time. I wondered why they had not gone south long ago.

On November 24, I ran into a huge flock of snow buntings. In hundreds they lifted and swarmed around me and the car, harmlessly glancing off the hood as we slid to a stop in the midst of this multitude of white wings. With their trilling note they whirled around us in dancing disorder and then drifted out over the fields like so many large feather-light snowflakes.

That night—a fairy night—the woods were dusted with first snowfall, a woolly layer of fresh snow that left them standing virginal and pure in the moon's silvery sheen. Then dawned the first crystal-crisp winter's morning. The lake covered itself with thin detached sheets of ice that eventually spread out over a few black runners of still open water. I knew then that winter was upon us.

With the ice and snow taking command of land and water, the feeding-place at the Loghouse became the rendezvous of the winter birds. As a stop-sign for any of the northern finches, crossbills, pine grosbeaks and others that

The Loghouse



he Loghouse

might happen along, I kept a place clear of snow and made it look attractively brown and bare with coal ashes. On this I placed a block of rock salt, knowing the finches' taste for salt. As it melted, it deposited delectable crystals on the surrounding snow and ashes, but it took the birds some time to discover it.

Red-breasted nuthatches, those engag-

Arctic three-toed woodpecker



ing small, slate-blue birds with their bills cheekily turned up and their tails too short, came to my feeding station. The first that took the daring flight to the suet in the window was a female. Coming into the cherry tree she saw a chickadee feeding at the window. She stopped short, upside down, with her bill turned up higher than ever. Curiosity soon got the better of her and she came over. She said "tetetetetet" and fluttered her wings, apparently addressing an unseen male, took a piece of suet and flew away with it. The next instant, a male appeared, took a sunflower seed and flew off. But he did not know what to do with it, so he dropped it. He returned, said "yank-yank-yank" through his nose, and attacked the suet. And so it began.

The first nuthatch I banded hissed at me. It was a big hiss for so small a bird. For a time hissing became the nuthatches' main way of asserting themselves around the feeding-place. Dramatic encounters ensued between them and the well-established chickadees. The intrepid small stranger rose to his toes in pygmy ire. Then he advanced upon the black-cap, with opened wings like



Red crossbill

owls do in defense, but in the nuthatch it became an act in miniature, ridiculous to witness. In the face of this the chickadees sat back and gave a high-pitched trill and then hastily retreated before a mock chase by the hissing nuthatch. Later on, habit and hunger inspired both species with a more tolerant and companionable spirit.

Once a strange nuthatch appeared upon the scene. He was greeted by loud "yanking" from all the home birds that hopped about in great excitement, with drooped wings and tails in the air. Now and again they batted their wings and drove home their point with a stuttering string of "tutututututs" or "tititititits." But the undaunted newcomer returned stare for stare. This exhibition went on for 12 minutes after which the desire for food got the better of all of them.

As to the creepers, they became very interested in the peanut butter smeared on the trunk of the red pine for their benefit. There they sat, fluffed up for

comfort in below-zero weather with their chestnut rumps showing and pecking delicately with their fine curved bills. Once in a while they called to each other with their faint long trill, or if I disturbed them they gave a fine but reproachful "tzi, tzi," and flew away to another trunk. When all the peanut butter was eaten they sometimes descended to a banding trap to look for a piece of suet. No matter if the trap was not set, the creepers blissfully caught themselves anyway by forgetting entirely which way they came in.

Two middle-aged female hairy woodpeckers returned to spend the winter in the vicinity of the feeding-place they knew so well. With great consideration for each other's peace of mind they staggered their visits to the suet. In the



Arrow points to site of the Loghouse

course of time a young female discovered the creepers' peanut butter in the red pine. The creepers did not mind sharing it with anybody, but the two old woodpeckers launched an immediate protest against this immature invasion. In turn they chased the new arrival until one of them finally cornered her in a dead poplar. There the two sat with spread tails, the young clinging to the underside of the branch and the old one

above. Between periods of frozen immobility they opposed each other in a standing dance of bizarre gestures in which they flapped their wings in unison and made jerky thrusts with their heads from side to side. But the young one refused to be intimidated. And after that, all three birds staggered their visits to the feeding-place.

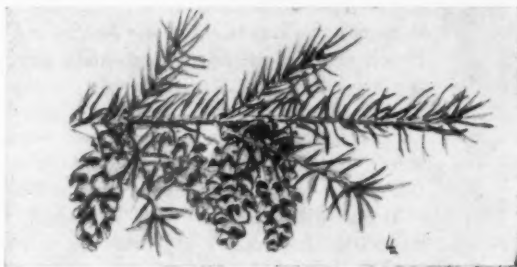
An Arctic three-toed woodpecker which had discovered two dying pines at the Loghouse in the summer, kept up regular periodic visits to these trees. She was a bird of shining black without the orange crown-patch as in the male, and her finely barred flank feathers in black and white stood about her like a soft fuzzy fringe. When alarmed she uttered a sharp "chick" which recalled the cardinal's alarm note. She usually arrived early in the morning and it took her several hours to go over the trunks of the pines from root to crown. With deft powerful blows of her bill she peeled off the bark in large flakes and then licked up the larvae that were killing the trees. When she left, the place was strewn with debris in which the creepers crept about happily, having a festive snack.

Early in December I got the first inkling that the highlight of this winter season was about to develop. It was then that I beheld flocks of purple finches, pine siskins and winter-dressed goldfinches. All these should have disappeared from the wintry North long ago.

I first met the birds on the highways. In flocks of various sizes they mixed with evening grosbeaks, which stood high in the peck order, and small numbers of red crossbills. Only the redpolls, ordinarily the most common winter bird from the far north, were absent until February when a few appeared with their red caps drawn down over their noses.

The birds sat engrossed in the business of pecking salty gravel with which the roads were sanded during the winter. In this way scores of them were killed by passing cars. Even for the careful motorist it was difficult to avoid them because

the birds sat so tight, lifting only in the last split second. One day I picked up four white-winged crossbills, recently killed by a car, and I regretted intensely that the dead bodies of these beautiful birds in my hand should be my first introduction to this interesting species. But the next thing I knew I found that the woods were full of them.



One day the finches discovered my feeding-place under the pines. Never before had the small place in front of my window seen such moving, twittering multitudes of birds. I could not even count them as they flew off and returned, whirled and swirled with a chorus of finchy notes. They particularly relished the crystals of the rock salt and crowded around snow patches discolored by slop water. With studied care they avoided my three banding traps set in this narrow space, disdaining every kind of seed I offered as bait. And so, my banding records show little of the abundance of these birds. Even the two purple finches I eventually got, birds that in summer are easily lured into my traps with millet and hemp, were now caught on 20 per cent salted coal ashes and 80 per cent good luck.

Soon I found what attracted these high-flying birds to our woods. They came for the evergreen cones and for the cones they remained. It was obvious that the hard brown seeds, hidden under the husks of the cones, possessed the nutritive ingredients which not only recondition the birds for the coming nest-

ing season, but enable them to withstand the excessive cold of this latitude where the temperature sometimes falls to 40 below zero. Not even heavy snowfalls and several feet of snow covering the ground was of any account when every tree in the forest was the storage room of plenty, capable of nourishing hundreds of birds throughout the winter.

The balsams with their small upstanding cones were the first to be cleaned out. Whether this was because the finches preferred these seeds or because they were the easiest to pick, I cannot tell. At any rate, for miles around all that remained of the balsams' rich cone harvest were stems that looked like stripped bobbins. The snow below was littered with husks.

When all this food was devoured I expected the finches to leave for other feeding grounds. But instead they attacked the white spruces and pines whose hanging cones they apparently pilfered without removing the husks. The tamarack cones found favor with the purple finches and the white-winged crossbills and the small conelike seed stores of the alder bushes with the pine siskins. And even if I did not see them, I knew of the passing visit of a flock of evening or pine grosbeaks by the remainder of a hearty meal of winged seeds on the snow below the mountain maple bushes.

Rare birds are always the object of the bird watcher's special interest because their stories are so full of unwritten pages. But with the attractive crossbills, unpredictable and unbound as their appearances and nestings are by any season, their appeal is strong for other reasons.

For one thing, they are undoubtedly two of the most beautiful species of the northern finches. The individual variations of their plumages are so great that, especially in the red crossbill, I can hardly recall having seen two individuals exactly alike. The basic color of the female red crossbill is greenish-gray and of the male, yellowish-red with dark brown wings and tail. A varying amount of yel-

lowish-bronze, particularly on the crown and breast, increasing in brightness on the rump, distinguishes many of the females from each other. The juvenile male is like the female, but from his first year to adulthood he apparently goes through as many changes as he has moults, in which the greenish-gray and yellowish-red battle for predominance.

In the white-wing the black wings with the "pearly" design of the two wing bars and the white edging of the tertial wing feathers is a striking feature which lends a butterfly appearance to the birds in flight. The female is olive-green, darkly striped on the back, and a bright yellow rump with a varying degree of yellow-bronze. From the first sight I had of the mature male I decided there and then that, in him, the rose-breasted grosbeak had its equal.

The flight of the crossbills is swooping and airy. Incredibly long glides with wings tight to the body are relieved by a few wing beats which give the birds either a new soaring lift or, with an abrupt twist, change their direction with acrobatic agility.

Long before the birds are in sight they announce themselves with clear whistled call-notes, "peet-wheet-wheet," given as often in flight as when perching in tree-tops. The white-wing's song is like that of a slightly muted canary's. Their notes are softer, sweeter and more musical than the red crossbill's, whose call sometimes comes almost as loudly as the pine grosbeak's and with metallic resonance. But even though I have often heard crossbills singing, I am loath to decide, without the evidence of the eye, which is the singer high in the top of the pine, whose notes drop so deliciously upon the hoarfrosty air. And it is only when I have caught sight of the shining apparition in the morning sun that I am quite ready to pronounce that the song of the red crossbill is like the music of water, while that of the white-wing is like an enchanted music box which cannot stop until entirely run down.



John James Audubon*

Miss Florence Audubon

1853 — 1949



Last living descendant, bearing the Audubon name, passes.

By H. Francis Korthueer

MISS FLORENCE AUDUBON, granddaughter of John James Audubon, was the last descendant in America bearing that surname.

She died at Daytona Beach on February 11, 1949, a few days before her 96th birthday anniversary. For many years she had been living during the winters in Florida, and taking trips in summer to her former home at Salem, New York, and visiting friends.

She never saw her illustrious grandfather as he died several years before she was born and the work of collecting and publishing Audubon's letters, was done by her elder sister. See "Audubon and his Journals" by Maria R. Audubon.

Personally, Miss Florence Audubon was a lady of very decided character and somewhat of a martinet in the conduct of domestic affairs. So much so that Maria, known in the family as "Delie," referred to herself on one occasion as "your obedient elder sister."

Although not an ornithologist, Miss Florence naturally was familiar with birds and in later years she still had keen eyesight and retained all her faculties and would sometimes, while driving about in Florida with friends, show a surprising interest in birds and point them out. This was quite unusual in one of such great age.

With advancing years she became

quite reticent in referring to her family and in 1942 when persuaded to go as a guest of honor to the annual meeting of the Florida Audubon Society, did so with the understanding that she would not be called upon to make an address.

This was her last appearance at any ornithological meeting.

Editor's Note: Mr. H. Francis Korthueer of Falls Village, Connecticut was distantly related by marriage to the late Florence Audubon. Unfortunately, he was unable to send us daguerrotypes of J. J. Audubon and others of the Audubon family because of a disastrous flood which inundated his home last winter along the Housatonic River, destroying many Audubon family photographs and records. Mr. Korthueer says:

"The only photograph of Miss Audubon which may be suitable for your purpose (to print in *Audubon Magazine*) is the one which I am enclosing. My personal acquaintance with her has been only during the past 15 years. . . .

"My cousins, who were real cousins to Miss Audubon, are approaching my age (76) and are ill and in no condition to contribute much. Others are all dead, as are all the preceding generations on both sides.

"As a boy I recall references to 'grandfather' Audubon and I knew Maria Audubon who had a school in Washington Heights attended by my cousins. I do not remember anything about Miss Florence at that time, probably because she lived at Salem, New York and we did not see much of her. . . ."

In the January-February 1934 issue of *Bird-Lore* (now *Audubon Magazine*) a notice appeared of the death of Harriet Bachman Audubon, a half-sister to Florence.

* After the rare engraving by C. Turner, A.R.A., painted by Frederick Cruickshank, about 1831.



Visitors to the Audubon Nature Camp of Texas look at a horned "toad." *Photograph by H. Kitchen, Jr.*

Captive horned "toads" (horned lizards), often die because they lack warmth and sunlight. They seldom accept food (meal worms, soft-bodied insect larvae and ants) unless warmed by the sun. In a temperature below 70 degrees F., they are sluggish and refuse to eat.



THE HORNED TOAD— Desert Oddity

By Lorus J. and Margery J. Milne

A homely creature with a strange defense has become a popular pet.

Photographs by the authors except where otherwise noted.

OF all the wild native animals familiar to the American public, probably none rank higher than the bear, fox, wolf and eagle. In every newspaper they appear in one guise or another, often as characters in cartoons. Similarly the old nickel with its bison turns up in each handful of change. Yet nationally recognized as these animals are, not one of them achieves the local esteem of a certain small lizard in Texas. You can't carry a live eagle or bison around in your pocket, but many a western child has wailed over the loss of his pet "horny toad."

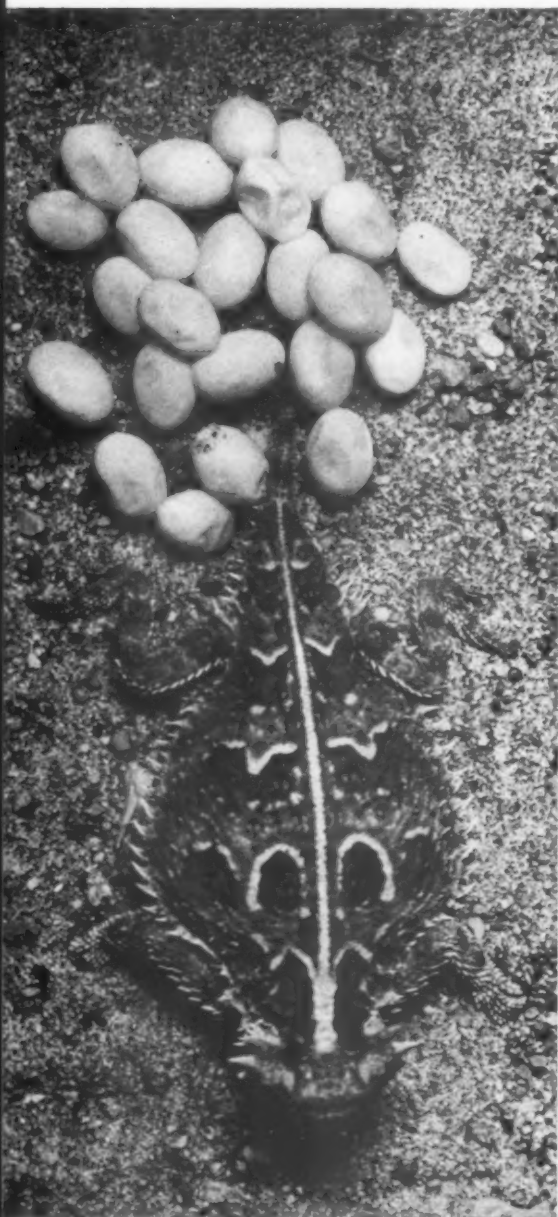
The horned "toad" (a lizard) living so deep in the heart of Texans, is brown-flecked and sand colored. Its back is rough, as though someone had rubbed its dry scales the wrong way. An angular head bears a crest of tapered spines only a little less sharp than the needles of the

prickly pear. Over the arid plains this mouse-sized creature scampers—a symbol of adaptability—finding food and shelter in deserts man has just begun to know.

The horned toad is one of the very few lizards that makes no great attempt to run away. If you pick it up (and many people want to), the creature's little black eyes seem lidless as they stare at you. The body stiffens from head to tail, and only the throat pulsates. The animal is busy pumping air, and soon its small body is a flattened balloon, fairly firm to the touch, rounded in all its contours. Between fore and hind legs, a scale-fringed border curves to the back where the roughness of the darker top surface meets the smooth pale underside. The short, spine-studded tail sticks out straight, tapering to a point like a kitten's. Four sturdy legs cling to your fingers with clear, hooked claws. But unless you turn the trusting reptile on its back, it offers little resistance to being handled. Even the back and horns may be stroked without the lizard doing more than closing its eyes. Scratching the belly surface leads the creature to alert itself, and puff more air inside.

Left to itself, the horned toad deflates its body. It can run like a chipmunk, but most of its time is spent in standing still. With forelegs stretched to raise head and shoulders well above the ground, it peers intently for insects within reach. If an insect comes into view, the lizard watches it awhile, then creeps toward it. As the horned toad stalks the bug, it curls its tail jerkily from side to side like a cat, its excitement evidenced only in this one amusing gesture. Otherwise the horned toad seems all too slow and careful. Within a step of the insect, the lizard stops, twists its head into the best possible position, and makes a sudden dart at its prey. Like a flash the horned toad's mouth opens and a soft sticky tongue darts out to flick the bug into the ample throat. Then the reptile steps back a pace and with head held up, parts its lips a trifle

Most horned "toads" give birth to their young, but the Texan species lays eggs that are covered with a tough, flexible, cream-colored shell.



and shows its tongue again, with all the satisfaction of a man who has just finished a particularly enjoyable dinner!

Horned toads seem especially fond of ants, and often settle beside an ant trail to pick up the workers coming along it in either direction. Given an opportunity, however, the lizard will attack even grasshoppers as long as its own body. In managing such a big insect, the chief requirement for its success seems to be to start at the head end. The little reptile studies the situation before making the first bite. If it is successful, the horned toad throws head and shoulders into a perfect frenzy, twisting and switching the jaws from side to side, pressing the prey against the ground, and at the same time backing up rapidly to keep its struggling victim from getting crosswise in its mouth. Soon nothing remains to be swallowed but the wing tips and hind feet of the 'hopper. Two minutes later the lizard may be looking for new prey. Opportunity knocks all too seldom in the desert, and insects are this reptile's sole source of both food and drink.

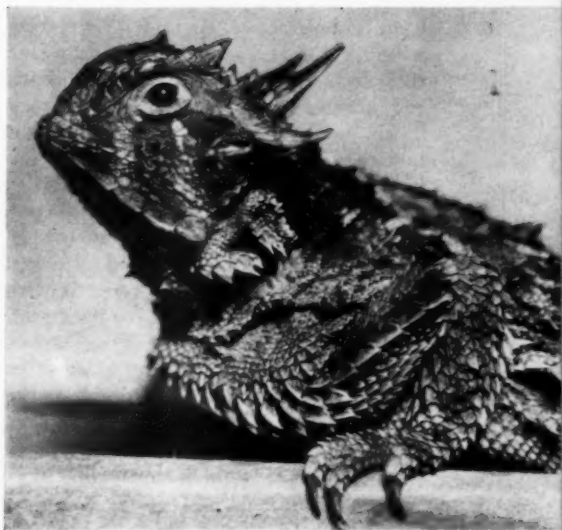
Through a strip of our country parallel to the Mexican border, the road-runner,* a bird of the Southwest, is a constant menace to the horned toad population. Otherwise this creature seems remarkably free from enemies and may owe its placid disposition to its relative freedom from danger.

Each horned toad matches the ground on which it normally lives. Over the yellow sands of Texas, the eight brown marks on a tan back blend with pebbles and fallen leaves so that only a practiced eye will see the lizard as it crouches motionless. Where the earth is full of limestone particles, as on the Pecos plains, horned toads are paler, almost ashy in their coloration, so that again they are very inconspicuous. And as one journeys through New Mexico and northward to the Okanagan Valley of British Columbia, or westward to the

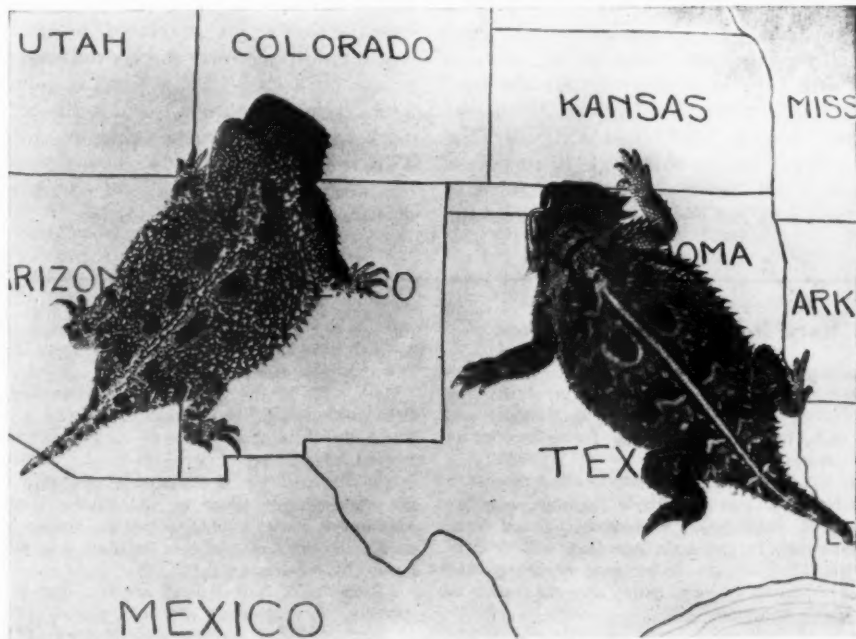
* See "On the Trail of the Road-Runner," by Alfred M. Bailey, *Audubon Magazine*, July-August 1945.

Pacific coast, the desert areas have other kinds of horned toads. Some have shorter horns, some great regal crowns, but all bear on their backs patterns and hues that match the land they inhabit. Where lava beds lie in the midst of piñon pine or ponderosa, these lizards may have two distinct forms within a mile or less. One has an almost uniformly glossy brown-black upper surface, to blend with cinder in the *malpais*, that part of the country overlain by dark lava. The other is mottled greenish yellow and rich reddish brown, flecked with gray and black, that makes it vanish among fallen needles and flakes of pine cone. Yet both are the same kind of horned toad; only their pigments differ. Turn them over and one sees that each has a pale gray belly surface freckled with black and brown and orange.

Horned toads hibernate in winter, burying themselves to a depth of a foot or so, keeping below the point to which true frost will reach. When the spring sun warms the ground again, the lizards



Horned lizards remind one of Indians who wear freakish masks in their tribal ceremonies. About a dozen kinds of these inoffensive reptiles inhabit our western states. The Texas species has much longer, sharper horns (above) than the brighter colored one of New Mexico and Arizona (l., below).



soon become active. By mid-June mating is underway, and in July the Texan reptiles lay soft-shelled, creamy eggs. Each egg weighs about one eighteenth as much as the parent does after she has laid them all on the sand. The astonishing feature is the number of eggs in a clutch—20 to 30 of them—with a combined weight much greater than that of the mother. She has not only stocked each egg with food and covered it with a tough, leathery shell, but for her brood she has also extracted from the desert more than her own weight in water to add to the eggs as the "white." In the arid plains of Texas this is quite a feat!

Among the horned toads, the Texan kind is almost unique in laying eggs. Most of the others add no shell, but retain the young within the mother's body until late August when they are past their embryonic helplessness. Then for some two hours, the parent labors at six-minute intervals to bring forth each toadlet. Only 30 seconds or so is required for a birth. There on the desert sand or forest floor will lie a miniature horned toad, legs hugged to its sides, tail curled under against its belly surface. Around it is a capsule of clear liquid, enclosed in a thin cellophane-like sac. With eyes and nostrils still closed tightly, the youngster begins to wriggle in its aquarium, and before two minutes have elapsed, it has punctured the membrane

at the front end. The fluid drains away, giving off an unmistakable odor like the albumin of a hen's egg. The pale tan toadlet stretches its head through the broken sac and begins to breathe hot desert air. A few more squirmings and the membrane slides off the hind legs and tail. The infant lizard is free. Its jet-black eyes open, and away it scampers after its parent. At 20 minutes of age the youngster's weight bears the same relationship to its mother's as did the Texan horned toad's egg. And this active baby is already rushing up to tiny ants, snapping them into its eager jaws.

From time to time each horned toad moults its skin. The old epidermis comes away in great patches like peeling sunburn, embossed with the scale pattern of the back or head or belly, cloudy but translucent. As the lizard uncovers the bright colors of its pigmented surface, something happens to its disposition. At this time most horned toads become pugnacious and if molested, may spring a special surprise. From each eye the creature can squirt a jet of harmless blood into the face of its attacker! The quantity is small, but force directs the stream almost horizontally for five feet or more. The creature's blood vessels include mechanisms that make this possible. This is the horned toad's secret defense—a most amazing performance without duplicate in the animal kingdom.

Rare Horned Frogs Collected

Specimens of some of the rarest of Brazil's horned frogs, most ferocious members of the frog race which devour other small amphibians and mammals, have been added to the collections of the Smithsonian Institution.

The largest of them do not hesitate to defy a human being, says Dr. Doris Cochran, associate curator of amphibians, who once collected some of these frogs in mountain rain forests, their chief habitat. They are six inches long or longer, and about as broad as long, giving the impression of formidable creatures.

Some of them have horns on their eyelids and

the tips of their noses. All have enormous mouths, so that a mouse can be swallowed quite easily, and they also devour other frogs.

Both sexes of the giant type, when excited, inflate their bodies like balloons, and utter a bull-like bellow. At other times they are heard to cry like an infant.

The "horns," Dr. Cochran says, probably serve no other purpose than to add to the ferocious appearance of the animal. They are simply hardened extensions of the skin, entirely too soft to be of any value in combat.

All species of horned frogs are very rare in collections. The creatures are seldom seen because of their secluded habitat and because of their

clever camouflage. They throw loose dirt over their bodies with their hind legs until they become practically invisible.

Rarest of all the family are the pygmy horned frogs, specimens of which have recently been received from Dr. P. E. Vanzolini of São Paulo, Brazil, a naturalist who has devoted much time

to studying their ways of life. The pygmies have horns on both eyelids and on the nose, as well as a fringe of horns around the eyes. They are beautifully marked with velvety brown and tan. The males have a jet black throat and a yellow rim around the jaws.

—The Smithsonian Institution, Washington, D. C.



HOW MANY CAN YOU ANSWER



By Alan Devoe

Audubon Magazine has heard from a few annoyed readers who think quizzes are undignified and frivolous, and also from numerous enthusiastic readers who insist that quizzes are the most enjoyable reading in the magazine. To the unavoidable annoyance, we're afraid, of the former, but to the pleasure, we hope, of the latter, here we go again.

Take a pencil, select the proper word, or phrase, of several choices given and underline. Quiz-takers will find the answers on page 406. Quiz-haters are presumably not reading this at all.

So here are 20 statements. Each one correctly completed scores five points. If your score is 60, you are well above the average. Above 80, you rate as an expert. Top 90 and you have beaten every quiz-taker on whom the quiz was tried before publication.

And now here we go:

1. The young of swans are called civets; murrelets; cygnets; goslings.
2. Fine shaving brushes are made from the hair of the beaver; wallaby; gopher; badger.
3. Pouched animals are called marsupials; ungulates; herbivores; trogons.
4. Toads are saurians; batrachians; coleoptera; arachnids.
5. A raven has a life-span of about four years; 25 years; a century; two centuries.
6. The cry of a marmot is a whistle; a bark; a howl; a song.
7. The nest of the American cuckoo is carelessly made; built of mud; bottle-shaped; non-existent.
8. A sulphur-bottom whale weighs most nearly five tons; 50 tons; 500 tons; 1,000 tons.
9. The adjective taurian pertains to lizards; frogs; bulls; prehistoric reptiles.
10. The meadowlark is closely related to the nut-hatch; meadow-sparrow; skylark; blackbird.
11. The number of eggs usually laid by a hummingbird is five; a dozen; one; two.
12. Reedbird is the Southern name applied to the wood thrush; the bobolink; the snipe; the red-winged blackbird.

13. When a leucosticte is frightened it may be expected to whistle; feign death; hiss and strike; burrow into the sand.
14. A trillium is also known as a spotted adder; wake robin; rain crow; tree toad.
15. The "peepers" heard in the spring are really cicadas; lizards; frogs; turtles.
16. Binary fission is a method of reproduction; the scoring left by a glacier; an optical distortion; the method by which woodpeckers kill a tree.
17. You are most apt to find chlorophyll in an oak tree; a lead mine; quartz; snow-crystals.
18. Pencil leads are made out of charcoal; plum-bago; lead; asphalt.
19. When birds are altricial they are slow to mature; harmful to agriculture; unable to fly; kept in cages.
20. A mandible is a jaw; a species of ape; a plant used in alchemy; a parrot.

See answers on page 406

GETTING CLOSER TO



Here, in simple terms, are instructions that will help you choose a binocular to fit your needs.

By Henry Harford

OUR old geometry teachers were wrong! A straight line is not the shortest distance between two points, but the *two* shortest distances between them. A bird student looks at a red-tailed hawk perched in a tree. The distance from the hawk to the student is 600 yards, but the distance from the student to the hawk is, visually, only 100 yards. The answer is a six-power (6x) binocular field glass. The hawk knows it is quite safe at its distance, and the student enjoys a good look at the bird. Both the bird and the birder are quite content.

But not for long!

Soon the birder thinks, "If I had a twelve-power (12x) glass, that hawk would be only 50 yards from me or, with a twenty-four-power (24x) only 25 yards—almost in my hands!"

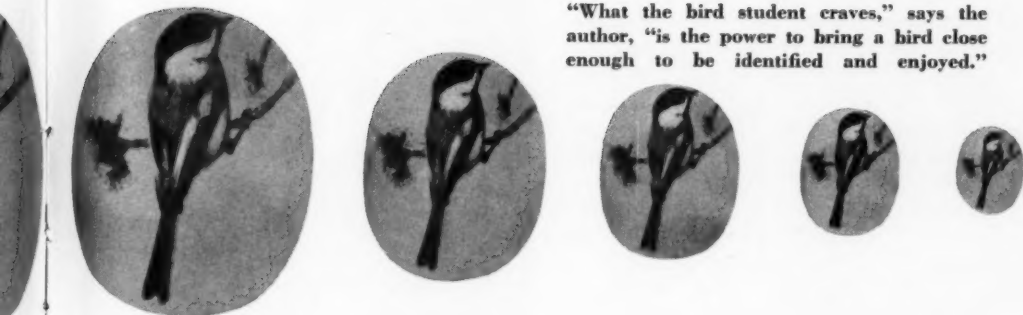
WHAT THE BIRD STUDENT WANTS

But it is not so simple as that. *What a bird student craves is the power to bring a bird close enough to be identi-*

fied and enjoyed. A child with inexhaustible energy and plenty of time can see many birds. If he has a two-power (2x) opera glass, he can see almost twice as many birds. Assuming that without binoculars he could identify all small birds within 50 feet, his 2x glass would, through magnification, bring them all within 100 feet. Walking, he would cover a strip of territory 200 feet wide—100 feet on each side of him. If he uses a 4x glass, his original 100-foot naked-eye strip widens to 400 feet. Furthermore his 4x glass enables him to view a bird without frightening it at 200 feet, which if approached within 50 feet, would fly away in alarm.

FIELD GLASSES VERSUS HIGH-POWER BINOCULARS

Fortunately, up to 4x, the simple telescopic field glasses without prisms are inexpensive. High school students usually can afford them and, by using their youthful leg power, they may identify as many birds as their less active elders owning the more powerful prism



"What the bird student craves," says the author, "is the power to bring a bird close enough to be identified and enjoyed."

glasses. Let no one give up birding simply because he has no super-binoculars.

Glasses above 4x are made without prisms but they are large and clumsy. Their worst feature is their extremely small field of view. About 60 years ago it was discovered that prisms could reduce the size of the field glass by folding the path of the light passing through the instrument. "Doing it with mirrors," we might say. Also, a much broader field of view was obtained—a vital aid in birding. Improvements have come about until 6x, 7x and 8x binoculars are practical and now in common use. At first 6x's were more popular, but with skill developed by users, 8x's are now commonly used and there are heated debates about the virtues of 9x and 10x between devotees of these.

HANDICAPS OF HIGH-POWER BINOCULARS

Handicaps for bird students arise when the power of binoculars is increased: brightness of the image decreases sharply; the field of view decreases; size of the instrument increases; weight of the instrument increases. The brightness of the image can be improved by the use of a larger objective lens, but this increases the bulk and cost of the binocular. "Coated optics" are now used to brighten the image seen through the glass. The Ger-

mans, during World War I, increased the field of view in binoculars by sacrificing a slight reduction in brightness. The weight of glasses was reduced during the 1930's by using lighter metal alloys. The large size of high-power binoculars has not been remedied, but there were rumors during World War II of a new lens material, not glass, which might solve this problem.

There are other objections to high power, but the manufacturer cannot be expected to overcome these. Beyond 10x, heat waves in the air often distort the image, and the glass tends to become unsteady in the hands since every little tremor is tremendously magnified. A person with steady hands can overcome this, but nothing can be done about atmospheric conditions.

BINOCULAR TYPES

Probably the first things we note about a binocular are the characters stamped upon the cover plates. Every American understands the value of the name and trade-mark of the manufacturer, but many are confused as to the significance of the figures, "8x24," "8x30," or "6x30." Some birders say "6x30" as if speaking of a piece of 2x4 lumber. It seems better to say, "A six-power, 30-millimeter glass," or contracted "6,30"—with the comma audible.

The symbol, "6x," means that the instrument magnifies six times natural size. That is, an object viewed through it appears to be six times wider and taller than normal; or, expressed in other terms, the object appears as it would if moved to only $1/6$ of its actual distance from the observer. The "30" stamped on the cover plate means simply that the objective lens (the large one) measures 30 millimeters in diameter. These two marks indicate roughly the use and performance which may be expected of the binocular, as will be shown later. It is somewhat like describing a certain motor car as a 6-cylinder sedan. But identical specification does not mean identical products. Two useful cars, Ford and Cadillac, are V-type 8-cylinder, but no one pretends that they are equal.

EXIT PUPIL AS IMPORTANT AS MAGNIFYING POWER

In any study of binoculars, the "exit pupil" must be considered since it is as important as the magnifying power in rating a glass. It is all very well to bring a distant water-thrush close, but in the deep shade, if we cannot see the line over its eye and the color of that line, we learn very little whether we use a 6x or a 10x binocular. This is the function of the exit pupil. To compare the performance of binoculars, the size of the exit pupil must be considered in addition to magnification.

Light (carrying the image of our bird) enters through the 30mm. lens, is detoured by the prisms, and comes out through the ocular (eye) lens. During this process the 30mm. circle of light is reduced to $1/6$ of its size or to a circle of only 5mm. in order to enter our eye. This small circle, or disk, known as the "exit pupil," can be seen by facing the sky or a window and holding the binocular about a foot from the eyes. The circle of bright light seen in the ocular (eye) lens is the exit pupil.

In any prism glass the exit pupil equals the diameter of its objective lens



divided by the power of the glass. Thus, the 8x,40 and the 10x,50 each have 5mm. exit pupils. Similarly, the 6x,24 and 10x,40 have 4mm. pupils and the 8x,24 and 10x,30 have 3mm. pupils. The exit pupil is the key to binocular performance since through it must pass all the light into the eye. Of course, *the larger the exit pupil, the brighter are the markings of the bird observed.* For comparison, it is customary in the optical trade to square the diameter of the exit pupil and call the result the *relative brightness* since this figure shows more graphically the amount of light admitted into the eye. Thus, in a 6x,30, the 5mm. pupil is squared giving a relative brightness of 25. A glass with a 4mm. exit pupil has a brightness of 16 while 3mm. produces only 9. The brightness of an 8x,30 depends on how many decimals are used in calculating.

CHOOSING THE BINOCULAR

We have been theorizing separately on magnifying power and relative brightness in binoculars. But in choosing a glass, we must accept both of them in one combination or another.

The 6x,30 is probably the best choice

"The 6x,30 binocular is probably the best choice for a beginner and possibly for the expert who limits himself to small birds. . . . The symbol '6x' means that the binocular magnifies six times natural size . . . an object viewed through it appears to be six times wider and taller than normal." Photograph of Alexander Sprunt, Jr., by C. B. Jenkins, Jr.



for a beginner and possibly for the expert who limits himself to small birds. With proper handling, one can see every bird with a 10x,50 that he can with a 6x, and more besides. The 10x is better for water birds, also for warblers in tall treetops and flycatchers on the opposite bank of the river.

Seven and eight power are the popular magnifications. With them, most birds that can be located by the naked eye can be brought close enough to identify. Very annoying exceptions are soaring birds and swimming birds that are readily visible but beyond 8x identification range. *The choice of magnifying power must depend upon the type of birding that one is interested in—6x to 8x for land birds and 8x to 10x, or more, for water birds and the larger wary species.*

Let's examine the popular 8x glasses, beginning with 8x,24, to see what combination of magnifying power and relative brightness is best for birding.

8x,24—Relative brightness 9. Small, convenient, and less expensive than some 8x glasses, but can be used only in good light and is a little tiring. One has a sensation of peeking through a tiny nail

hole in a fence instead of through a good comfortable knothole.

8x,30—Relative brightness 14. Only slightly larger than the 8x,24, still convenient to handle and only a little more expensive. It can be used in moderate light, but it is not entirely satisfactory in densely shaded woodlands or in twilight. It provides a good-sized "nail hole" to peer through.

8x,40—Relative brightness 25. A joy and delight. There is plenty of light from dawn to dusk; plenty of knothole to look through and we can really see birds. But with a 40mm. objective lens, the rest of the glass must be large in proportion. Therefore, the 8x,40 is bulky and rather heavy to carry in the field and, since optical glass is expensive, the cost is much more.

8x,56—Relative brightness 49. This may be used even at night but what bird student wants a glass at night? Furthermore, this glass is large and awkward so that there is little temptation to glance at the price tag.

In the 8x series, the bird student should choose either the 8x,30 or the 8x,40 binocular. Of the two binoculars, the 8x,30 is the better buy. Although

the 8x,40 is slightly superior it is about twice as costly.

Similar conclusions will come from examining the series 6x,18, 24, 30 and 42, or the series 7x,25, 35 and 50, or the 10x,30, 40 and 50. In each of these series we will find that a relative brightness of less than 9 is unsatisfactory and that more than 25 is rather useless and that about 15 seems the most popular among bird watchers.

Perhaps, most birders compromise on about 15 and sometimes they may long for 25.

ADVANTAGES OF COATED OPTICS

"Coated optics," a new treatment which eliminates internal reflections, is rather technical to explain. Its most apparent benefit is increased brightness. The 8x,24 coated becomes nearly as bright as the uncoated 8x,30 and the 8x,30 approaches the 8x,40. However, the knothole effect remains unchanged. Coating intensifies colors and contrast and better detail is visible when looking against the sun. But the old rule of keeping the sun at your back remains good. Coating of all lenses and prisms in high grade binoculars is now standard practice and is worth the fairly reasonable cost. No general advice can be given as to coating old binoculars. The process is entirely on the surface and cannot improve "bubbly" glass, poor design, or inaccurately ground lenses.

IMPORTANCE OF FIELD OF VIEW

Many assume that a large objective lens in a binocular indicates a large field of view. Actually, the field is determined by the *design* of the ocular lens. Nor can it be computed from the power or lens diameter. It can be determined only by test or by the statement of a reliable manufacturer.

We bird watchers are different from people who use binoculars for other purposes. We use our glasses to see small objects near at hand against confusing

backgrounds. Most other users of binoculars wish to see large objects at a great distance, often on water where the object is easily located and moves slowly or is stationary. Therefore, many otherwise excellent glasses, which are desirable in army maneuvers or in observation towers, are avoided by birders because of narrow field of view. On board ship, a glass which covers a 90-yard section of shoreline 1,000 yards distant is quite adequate. But for the birder, aiming his weapon at an active warbler in a maze of foliage 100 feet away, a field of only 9 feet is inadequate. It is even more difficult to see the bird with a field of $4\frac{1}{2}$ feet at a distance of 50 feet.

Most good 6x binoculars have a field* of 150 yards at 1,000 yards away, which is adequate. But as the power increases the field *decreases* and the old type 8x has only 125 yards at 1,000. During the past two decades, 8x glasses were developed with a field of 150 yards. A third lens has been put into the ocular,

* Field of view is also expressed in angular measure (degrees and minutes) but this is not so easily visualized as yards and feet.

★ N A T U R E I N

The Nosey Bird

Africa's shoebill looks as though he poked his face in a shoe and got stuck

Photograph by Ernie Palinka's—Pix.



with the disadvantages of slightly increasing weight, and losing light, but this is more than compensated for by the use of lightweight metal and the coating of lenses. A field of 125 yards is generally considered adequate for observing birds. A field of 150 yards is excellent for seeing small birds in obscure backgrounds. One-hundred-ten yards imposes difficulties on the observer, except for water and shore birds. A field of 100 yards or less is unsatisfactory for birding. Happily for the bird watcher, the wide angle glass is here to stay.

CENTRAL VERSUS INDIVIDUAL EYE-PIECE FOCUSING

There are two types of focusing adjustments on binoculars and field glasses. Individual focusing means that each ocular is turned separately to suit each eye. This simple rugged water and dust proof construction is popular with the Army and Navy. It can be used in the sport of birding but the central focusing system is much more convenient. One wheel adjusts for both eyes simultane-

ously which makes it easier to keep focused on birds in rapid flight. Some mechanism to combine the advantages of both types of focusing is needed.

GENERAL CONCLUSIONS

Weight and sometimes dimensions are given in the folders published by all reputable manufacturers of binoculars. While lightness and compactness are certainly desirable, they are not really important factors. They cause less fatigue during a day of birding but will not add a single species to the list. And, for most of us, there is another very large factor—the cost.

Birding with glasses may be compared to touring. One may see quite a bit afoot, but he sees much more of our fair land with a car. There is no substitute for the comfort and mile-covering ability of a Cadillac. But the large number of intelligent, energetic tourists of modest means seem to have more fun in their Chevrolets. And neither of these can match the sheer joy of the lad in his jealousy of forgotten vintage.

THE NEWS ★

← There's an old legend in Africa about an inquisitive young marsh-crane who couldn't mind his own business. One day, coming upon the slipper of a sorcerer while the latter was bathing in the River Nile, he poked his bill right down to the toe. The sorcerer, catching him at it, condemned him to wear the slipper over his bill for the rest of his life. Centuries later, the African shoebill still looks as though he were paying off the sorcerer's curse. The walking shoetree above is in Bronx Zoo, New York City.

—Parade, August 14, 1949

Killing of Hawks A Hazard to Other Birds

Appealing to the foresight and common sense of sportsmen, farmers and ranchers when the autumn migration of hawks and eagles exposes great numbers of them to guns and traps throughout the United States, the National Audubon Society issued this statement which was used Sunday, Oct. 2, 1949 as the basis for an illustrated Associated Press feature story which appeared in more than 200 newspapers:

New York, N. Y.: "Thousands of ducks and other

waterfowl, upland game birds and insectivorous ground-nesting songbirds are alive today because hawks, owls and eagles have destroyed enormous numbers of rats, weasels, ground squirrels, snakes and other devourers of eggs and fledgling birds.

"From mid-September until November, northern nesting birds of prey will be moving south to winter ranges. These hawks will take a heavy additional toll of rodents on their travels. By far the majority of migrant hawks are rodent-hunting red-tails, red-shoulders, broad-wings, Swainson's and rough-legs, conspicuous by their large size and slow, soaring flight. They are not bird-killing hawks as a rule. The more of these birds of prey that can be spared from gunners, pole traps and other human destruction, the greater will be the human and wildlife benefits from hawk inroads on the surplus rodent population of North America. The senseless past slaughter of hawks of these species has brought some of them within risk of extermination."

As an illustration of the boomerang effect of ignorant or misguided killing of predatory birds on human welfare, the Society further states:

"Widespread publicity was recently given to western pilots hired by ranchers to shoot down hundreds of golden eagles from the sky, on the grounds that these birds were taking many young

Continued on Page 397

Our Beautiful
Western Birds



CALIFORNIA QUAIL

The state bird of California is here portrayed with the state flower, the California poppy. The California quail with its jaunty "topknot" is an unusual looking bird, full of handsome color and intricate pattern, but usually all we see is a plump gray bird, with legs twinkling, running for the nearest cover. This native son has been transplanted into many other places such as Washington, Oregon, Nevada, and the Hawaiian Islands where it seems to thrive, but similar attempts to set it loose in the East have not worked out. That is the domain of the Bob-white.



Painted by
Roger Tory
Peterson

CALIFORNIA WOODPECKER

Clownish is the visage of the California woodpecker and clownish are its actions—the bowings and scrapings that go on when two birds meet. The harsh “chak-a chak-a chak-a” or “jacob jacob jacob” is a familiar sound in the oak woods where this bizarre bird busies itself gathering acorns. These it shoves point first into holes which it drills in tree trunks or telegraph poles, until its larder is peppered with hundreds of wormy nuts, each firmly lodged in its individual niche. Although the California woodpecker seems to prefer the oaks, it ascends the mountains to the yellow pine belt.



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A FAIR DEAL FOR OUR *Birds of Prey?*

The author charts 50 years of legal protection for eagles, hawks, and owls and finds much to be desired.

By Richard Stuart Phillips

WHEN the first issue of *Bird-Lore*, now *Audubon Magazine*, appeared in 1899, only five states offered any legal protection to the eagles, hawks and owls.

In this fiftieth year of publication, six states—Alabama, Arkansas, Georgia, Idaho, New Mexico, and Virginia—still fail to protect *any* of the birds of prey. Maine, Maryland, Michigan, Nevada, New Hampshire, and Oklahoma give *no* protection to hawks and owls, and some of these states even include shrikes on the unprotected list. Montana laws fail to protect eagles, and all hawks; Rhode Island does not protect hawks (except the osprey), owls, and shrikes; Connecticut protects no hawks except the osprey.

Fifty years ago, 30 states offered *no* protection to any of the birds of prey. Now at least 30 states protect all hawks and owls, except the bird hawks—Cooper's, sharp-shinned, and goshawk—and the great horned owl.

Slowly we have recognized the value of our birds of prey in the control of insects and rodents that exact a yearly tribute of millions of dollars worth of farm crops, but recognition by legal protection for them, and by law enforcement, is far from being complete or sufficiently effective. In 1850 Kentucky passed a law to protect "the small-eared owl" (probably the screech owl), but it was not until shortly after the turn of the century that the legal protection of birds of prey began to gain favor. We should remember that 50 years ago when *Bird-Lore* was born, wildlife conservation was little more than a seemingly radical idea.

There are far more laws protecting predatory birds in 1949 than there were in 1899, but some of them are contradicted by state game codes, written by officials legally bound to support them. For example, on page four of South Carolina's Digest of Game Laws, both species of eagles are listed among the



← The beautiful rough-legged hawk, almost exclusively a destroyer of rodents, is still shot by men with an unreasoning prejudice against all birds of prey. Photograph by Hugh M. Halliday.

A boy tries to ease the pain of a partly-blinded red-tailed hawk, shot down by a hunter during its migration. Photograph by Henry Gilbert.

birds to be destroyed, yet on page 40 of the same publication, "killing one of these birds is punishable by a fine of not less than \$25 nor more than \$100, or imprisonment for not more than 30 days."

Some states, with some justification, have based their legal protection of predatory birds on scientific research into their food habits. Commercial interests have influenced others in their legislation, particularly some of the western and southern states where golden eagles are shot the year around. Ignorance and lethargy have played their part, too. In Idaho and Georgia nighthawks are not protected because these insectivorous birds bear the misnomer "hawk." Superstitions handed down from the Middle Ages concerning owls being "birds of ill-omen" and the pets of witches have influenced some of our codes of law.

Fifty years ago three states protected only the American eagle, nine protected the vultures,* one protected only songbirds, one protected the shrike,* and one the osprey. Utah protected all hawks and owls.

Although our present laws contrast favorably with those of half a century ago, they are often inconsistent. Three states—Montana, South Carolina, and Wyoming—list the bald eagle as unprotected, although it is protected by federal law. Nearly all states protect the vultures, but Delaware authorizes a bounty on them. Most states regard the shrikes as songbirds, but eight consider them "destructive predators." Vermont and several other states include the kingfisher in the same category.

Nearly every state, except those cited earlier in this article, has shown some progress during the last half century in the protection of raptors, but there is still much to be done. The head of the conservation department of a state that recently adopted what some people consider a model code, wrote an article that

was published last year in that state's conservation magazine. In it he stated that some hawks and owls made serious inroads upon game bird populations and by implication included practically all species of predatory birds. It is astonishing how consistently some state game commissions and the wardens in their employ overlook the very laws they are paid to enforce.

In Ohio, all birds of prey are protected unless they are "found doing damage to property." The head of the enforcement bureau of the Ohio Department of Conservation interprets this in such a way that a farmer or any other individual need not wait until the bird has been seen doing damage, but may shoot a hawk or owl to *prevent* damage, which is not at all what the legislators intended when the law was passed.

A broad-winged hawk brings a rodent to its young one. These gentle, inoffensive hawks, often migrating together by the hundreds, have been slaughtered in the mistaken belief that killing them benefits game species. Photograph by Samuel A. Grimes.



* Vultures and shrikes have been included with the truly raptorial birds. See chart, "Fifty Years of Legislation for the Birds of Prey," page 392.

In Ohio, "hawk-hunting" is common practice. Many people, particularly "city hunters," make a hobby of it. On Sunday afternoons they drive over country roads equipped with scope-mounted rifles, looking for any hawk that offers a target. All predatory birds—from the little sparrow hawk to the gentle, inoffensive broad-winged hawk—is an acceptable trophy.

Every time these men kill a hawk they break four different laws, distinctly set forth in the Ohio game code. They are shooting on Sunday; killing a protected species; shooting from the road; and—since they always retrieve their booty to exhibit to their friends, walking across the farmer's land to pick it up—they are breaking the trespass law. Yet nothing is done about it.

Not long ago, near my home in northern Ohio, a city hunter killed what he thought was a very large hawk. When he retrieved it, he discovered that it was an American eagle, protected by both federal and state law. Alarmed at what he had done, he sought out the game warden and informed him of his plight.

"Think nothing of it," the game warden said. "Just take it over to the local high school, give it to the science teacher, and no one will say a thing about it." That is usually the attitude taken by game protection agents in this state, and in many others.

The Pennsylvania hawk laws, which supposedly protect all except the three accipitrine species, are a tragic example of destruction under the guise of protection. The Pennsylvania Game Commission continues to pay a \$5 bounty on goshawks and great horned owls. The antiquated bounty system is staunchly upheld by the heads of the commission, despite the findings and advice for its discontinuation, by the commission's own technicians! The goshawk bounty is actually an incentive to kill all hawks, although the state must pay the bounty only on goshawks.

The Swainson's hawk of our western prairies, one of the tamest of all birds of prey and a well-known rodent- and insect-eater, lives in harmony with many kinds of songbirds. Photograph of a wounded bird by Cyprus L. Lask.





The great horned owl, unprotected in most states and an efficient predator in helping to control rodents that destroy game birds and farm crops, is frequently killed by farmers, sportsmen and game wardens. Photograph by the author.



"In Ohio, hawk-hunting is common practice. Many people, particularly 'city hunters' make a hobby of it. . . . Any predatory bird . . . is an acceptable trophy." Photographs by the author of red-tailed hawks and crows killed in an Ohio "hawk shoot."



Recently I asked a conservation official from a midwestern state why his department so consistently avoided the issue of the birds of prey, since they were as much in need of conservation as were pheasants and rabbits. He replied, "We're so busy trying to keep enough pheasants in the field to make the hunters happy that we can't take time for anything else."

Despite the strides made in education and in better legislation for them, the future existence of many species of predatory birds is threatened, perhaps more so than at any time in our history. Maurice Broun, an eminent authority on the status of predatory birds and Curator of the Hawk Mountain Sanctuary, says:

"I do not think that any of the so-called birds of prey are increasing. My conversations with scores of experienced observers all point to one conclusion: that they are barely holding their own, and that in most instances the cards are stacked against them. How can such large and specialized birds increase generally, except where local conditions are unusually favorable, when their habitats are constantly threatened by fire and lumbering, and the ever-increasing army of gunners finds hawks and owls tempting targets in lieu of legitimate (and decreasing) game?"

To maintain the numbers of the birds of prey that are left us, we must have more "model laws" and a constant program of education in every state of the union; also law enforcement that is law enforcement.

Our predatory birds are an irreplaceable part of nature's vast plan, filling an important niche among trees and shrubs, game birds and mammals, and other kinds of wildlife with which their lives are intricately woven. Everyone interested in the out-of-doors, and in birds of prey as economically valuable and beautiful inhabitants of our woods and fields, should dedicate himself to obtaining better laws for their protection and to enforcement of those laws. The raptors cannot hire public relations

counsel, so we must carry on a continuous campaign in their behalf—through newspapers, magazines, radio, and every medium through which we can help save an invaluable part of our bird fauna from utter destruction.

EDITOR'S NOTE—A survey of the laws in force to protect the birds of prey in the various states leads to the conclusion that no state has a "model law," although Wisconsin and Ohio perhaps come closer to it than other states.

Continued on Page 392

Although it, too, is often persecuted, the comely little sparrow hawk tries to live close to man. With the disappearance of hollow trees, it sometimes chooses abandoned houses, barns, and even the tall buildings of great cities for nesting. Photograph of female sparrow hawk by Hugh M. Halliday.



CONVENTION



JOHN H. BAKER told the assembly that in order to conserve birds, we must save soil, water and plantlife.



EDWIN G. BOYES, President of the Detroit Audubon Society, gave the address of welcome.



ROGER TORY PETERSON recommended "birding as an antidote to our highly complex world."



GEORGE MIKSCH SUTTON pointed out the evil effects of forest destruction in Mexico.



LUDLOW GRISCOM:
"... The Audubon movement can make known to laymen the role of birds in nature."



Delegates gathered for a social evening at Cranbrook gymnasium.

Convention photographs by Homer D. Roberts and Harvey Croze.



John H. Baker, national president, chats (left to right) with Dr. Harrison I. Lewis, Chief, Dominion Wildlife Service, Dr. J. R. Dymond, Royal Ontario Museum, and Mrs. Edwin G. Boyes, Detroit Audubon Society. Dr. Lewis addressed the delegates after the Point Pelee field trip, outlining the history, exceptional birds and plants, and ecological surveys planned for this famous Canadian National Park.

Dr. George M. Sutton (left, center) helped identify Point Pelee ducks.



NEWS



From Maine to California, from Minnesota to Louisiana, 500 delegates attended the National Audubon Society's 45th annual convention at Detroit, October 15-18, 1949.

DETROIT NEWSPAPER REPORTS

Detroit Is Honored

THE assembly in Detroit of the annual convention of the National Audubon Society—outside New York City for the first time in the Society's 45-year history—is a notable honor to our community.

Inasmuch as the membership of the Detroit branch of the Society exceeds that of any other city, and its enthusiasm not only for the wholesome recreation of bird study, but its expanding activity in all phases of wild life conservation have for some years been regarded as something of a national phenomenon, the honor is of course not undeserved. But we should not therefore be found wanting in appreciation.

Scores of the foremost authorities on nature in its many aspects will be on hand from Saturday through Tuesday to entertain and instruct. More than 500 delegates from all parts of the United States and Canada will be present to learn of them.

The opportunity for the general public also to learn what the authorities can tell and what the local chapter has that makes it so resoundingly "tick," is one that should not be neglected.

Audubon Delegates to Go to Point Pelee

A field trip to Point Pelee, Ont., and a visit to the Jack Miner Bird Sanctuary at Kingsville, Ont., are

Visit to Jack Miner Sanctuary →

Pt. Pelee yielded 89 bird species.

highlights of today's program for delegates attending the annual convention of the National Audubon Society here.

The Detroit Audubon Society is host to the national body, which is holding its convention outside of New York City for the first time in its 45-year history.

Roger Tory Peterson, artist-naturalist, speaking Saturday at the Rackham Educational Memorial, paid high tribute to Edwin G. Boyes, president of the local group, Thomas E. Hadley and other local leaders for their development of public interest in the outdoors.

Dr. Harrison F. Lewis, chief of the Dominion Wildlife Service, is to preside at this evening's program at the Detroit Institute of Arts. John H. Baker, president of the national organization, will give the Audubon message.



TOM HADLEY, Chairman, Convention Committee, was largely responsible for convention success.



WALTER P. NICKELL led the field trip to Cranbrook Institute of Science.



BEN EAST: "... Conservation is something we must practice from now on, whether we want to or not. ..."



CARL BUCHHEISTER, national vice-president, "... Teachers may inspire children to careers in natural history."

KEN MORRISON, incoming editor of Audubon Magazine, gave the convention animation.



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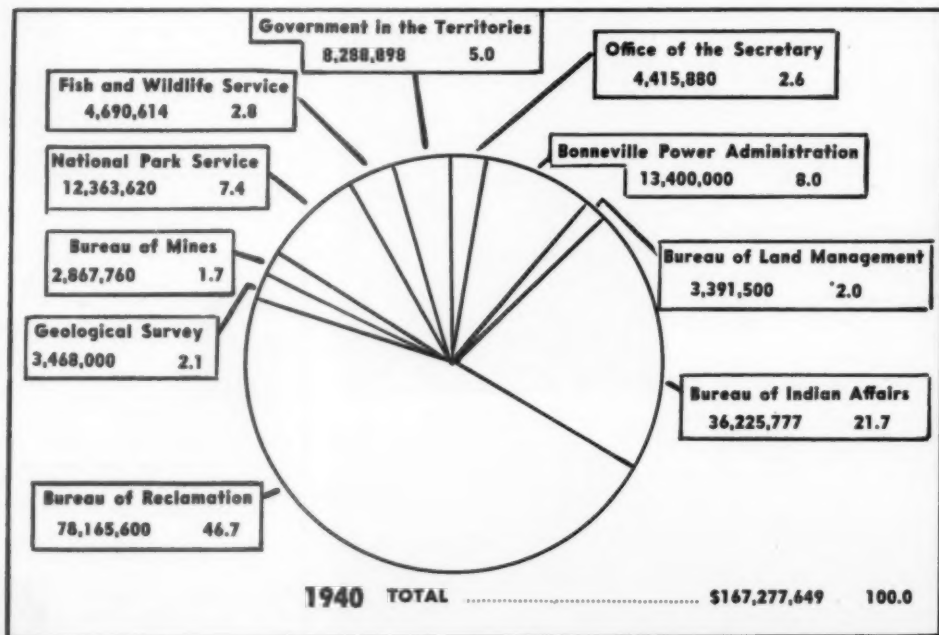
THE PRESIDENT *Reports* TO YOU

The Department of the Interior is one of the federal agencies most concerned with the conservation of natural resources. The carrying out of its conservation program entails money. From the chart reproduced here, you will observe that in the nine-year period from 1940 to 1949 the total sum appropriated for use by this Department increased by nearly \$300,000,000, but that the three bureaus most concerned with conservation of

natural resources, namely the National Park Service, the Fish and Wildlife Service and the Bureau of Land Management, only received some \$9,000,000 of this increase. The lion's share went to the Bureau of Reclamation, which is primarily concerned with the construction of dams for power and irrigation.

Let's take a look at the budgetary methods of the government. The President of the United States confers with

First figures (below) are dollar appropriations; second figures are



the Director of the Budget, and they decide on the total sum for the Department of the Interior, and specify just how much of that total is to be allocated to the program for irrigation and power. The Secretary of the Department is granted discretion as to the allocation of the balance to all of the other bureaus. The Congress, in passing on the appropriation bill for the Department, has the final say, subject to the President's possible veto, but does not usually, in practice, alter appreciably the relative allocations.

LOCAL SPENDING INFLUENCES RECIPIENTS

Generally speaking, the conservation agencies, such as the National Park Service, the Fish and Wildlife Service, and the Bureau of Land Management, do not hand out their funds in cash to local citizens for materials or labor, whereas that is a major factor in the operations

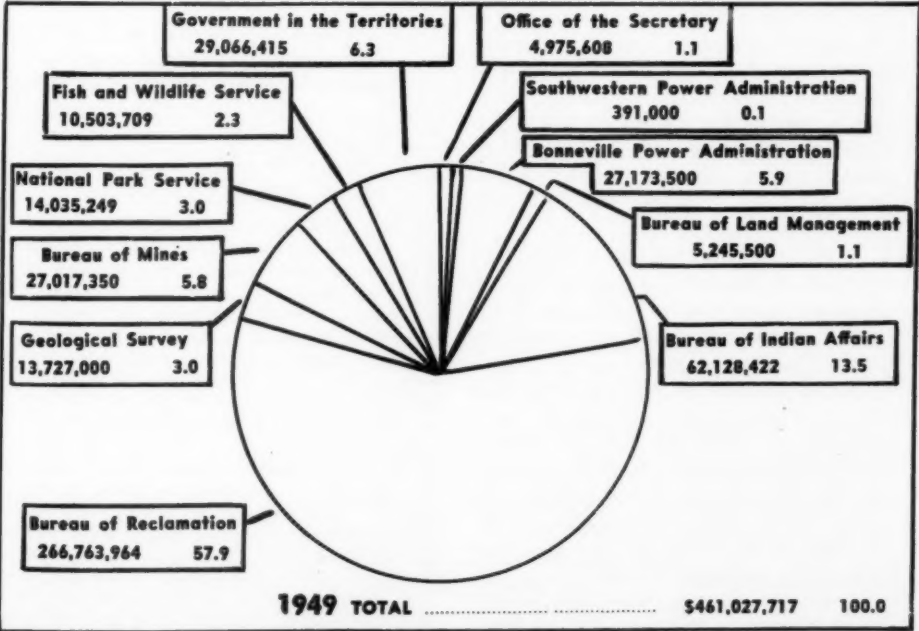
of the Bureau of Reclamation. It is not surprising to find the Bureau of Reclamation and, for that matter, the Army Engineers, seeking authorization for construction projects in every voting district in the United States where there is a stream that can be dammed.

As our democracy works, the President of the United States, the Secretary of the Interior and members of the Congress are influenced by the relative degree of public interest demonstrated in the various categories of the departmental program. The pressure of self interest on many local citizens receiving cash and prompt cashable benefits from the construction and operation of a dam is bound to have considerable effect.

WHAT YOU CAN DO

There, in a nutshell, is the problem in properly financing the bureaus that are primarily concerned with the intelli-

percentages of the total. Courtesy of the U. S. Department of the Interior.



gent treatment and wise use of natural resources. The basic job that has to be done is to awaken more of our citizens to the degree of self-interest that is truly theirs in supporting relatively larger allocations of the total available funds to the conservation agencies. While this necessitates considerable educational effort in disseminating information to all corners of the country, it does not mean that much may not be gained now by submission of views and recommendations to your own Congressman and to the Secretary of the Interior.

ADVISORY CONSERVATION COMMITTEE RECOMMENDATIONS

Your President happens to be currently Chairman of the Committee on Conservation Advisory to the Secretary of the Interior. There are nine members of the Committee, appointed by the Secretary in their individual capacities, and not as representatives of organizations. There is provision that one-third of the Committee retire each two years at the election of the Secretary. It is the feeling of the Committee that it can be most useful by concentrating its attention on recommendations concerning over-all policies of the Department, rather than by seeking to take a position for or against individual bills or specific projects. At its most recent meeting, the Committee submitted to the Secretary the following recommendations:

1. We urge that budgetary allocation of funds at Department level give greater emphasis to management and preservation of existing resources as contrasted to development projects.

2. We approve of watershed basis of balanced planning, conservation, development, and administration of resources in the field of federal authority, subject to approval of projects and programs by a Board of Review responsible to the President; this in order to insure conformity to national interest.

(Note: In essence, this means that the Committee advocates a watershed basis for proper

management of natural resources, as well as regional decentralization of administration and over-all control by a top-level Board of Review.)

3. We approve of the plan of regional decentralization of the Bureau of Mines as achieving better means of conservation of natural resources.

4. We approve the Department's program for mineral development and oppose an across-the-board production subsidy program in the mineral industries.

(Note: This means approval of subsidization of uneconomical mines producing metals listed by the Munitions Board for strategic stock-piling, but opposition to subsidization of mines not producing such strategic metals, but simply unable to operate at a profit.)

5. We recommend that the Bureau of Mines do whatever possible under law to study and publicize methods of minimizing pollution of air, soil and water.

6. We recommend consideration of amendment of basic mining laws to include:

- a. No leasing for mining or oil on lands operated in the public interest without consent of operating agency.
- b. Revision of mineral and patent rights on surface federal lands so as not to interfere with public purposes.
- c. Amendment of the placer law to provide for new leasing act and to abolish patenting of land.

(Note: This means that agencies such as the Fish and Wildlife Service, or the Forest Service in the Department of Agriculture, should have veto power against the issuance or extension of mineral leases on the lands under their jurisdiction. This they do not possess. It also means that basic mining laws badly need revision, as portions thereof, as distinct from present mining practices, are in conflict with the needs of the current situation. Many persons in many places have staked out mineral claims under the mining laws without ever having the slightest intention of attempting to mine on the property. Some cut off the timber; some run gasoline stations or hunting lodges; some build residences, etc., etc. Such practices seriously interfere with the development or an orderly and wise conservation program on those and, frequently, adjacent lands.)

7. We recommend that studies under the leadership of the National Park Service on the Atlantic and Gulf Coasts, considering values for wildlife, scenic preservation, and recreation, be brought to early completion.

8. We recommend early completion of a comprehensive plan for conservation of soil on lands under jurisdiction of the Department of the Interior.

(Note: Although agencies of the federal government have given much wise advice and help to private landowners as to conservation practices on the latter's lands, the government itself is wide open to severe criticism for its own failure to set a good example on its own lands. While this is partly the fault of the government departments, it is primarily the fault of the Congress, which, up to now, has seemed unwilling to provide adequate funds for such purpose.)

9. We recommend that any legislation authorizing transfer of federal lands for public purposes without competitive bidding shall contain guarantees for continuance of such public purposes.

10. We recommend that steps be taken to the extent necessary to make Public Law 732 of the 79th Congress applicable to projects authorized prior to its enactment.

(Note: This law provides that the Fish and Wildlife Service be consulted as to biological consequences of the construction of proposed reclamation projects, but unfortunately the provision appears to apply only to projects authorized after the passage of the Act. A large proportion of the projects under present consideration, holding great potentialities of damage to wildlife and other natural resources, happens to have been authorized before the passage of the Act.)

11. We congratulate the Secretary on implementing his announced policy that no reclamation projects would be permitted to invade national parks, and we urge that the same policy be extended to all federal wilderness areas.

(Note: The reference is to the Secretary's decision that the Kanab Creek Project be abandoned. This would have diverted water from the Colorado River above Grand Canyon National Park, taken it through a tunnel many miles to a new dam site, and returned the

water to the river beyond the limits of the said park. Thus, the amount of water in the river within the boundaries of the park would have been reduced to a relative trickle.)

FURTHER VIEWS OF THE COMMITTEE

To many of our readers it may seem as though many of these matters are far removed from direct protection of birds and other wildlife, but as a matter of fact nothing is more fundamental to such protection and perpetuation than the preservation of habitat for animal and plant life of all kinds. The results of long periods of successful protective effort can easily be wiped out overnight, so to speak, by the application of unwise policies in such fields as those with which the recommendations of the Committee, listed above, are concerned.

By way of clarification of the views of the Committee with regard to recommendation #2, you will be interested to know that, at the time the introduction of the bill to constitute a Columbia Valley Authority was under consideration, it recommended that if a bill were to be introduced to set up a Columbia Valley Authority, provision be made therein for flat prohibition of any structure or project that would in any way cause encroachment on a national park, national monument or designated wilderness area; also provision that the biological consequences of the building of any structure, or other alteration of the environment, be studied and taken into consideration before determination of feasibility and/or approval; also provision requiring recognition and consideration of the scenic and recreational uses of water, without the granting of any priority status to power, flood control, navigation or irrigation purposes. Furthermore, if the set-up were to involve appointment of persons constituting the equivalent of the directorate of an authority, the Committee recommended provision for inclusion of persons severally representing wildlife and recreational interests.

Audubon Guide To Bird Attracting

A department in which our readers can share with each other what they have learned about how to attract birds.

By John V. Dennis

Each season brings problems for those of us who are interested in birds and their welfare. When summer ends, and the familiar nesting birds have finally raised their broods of young and departed, other birds from the North arrive to take their places. For our enjoyment, and in the interests of the newly-arrived birds, we try to make our premises a haven where food, water and shelter are abundant. Our problem then is to catch the attention of passing birds and to get them coming to our feeders.

With the arrival of snow and cold weather, we are likely to have plenty of birds. However, to the despair of many people who feed them, a large proportion of their visitors may be English sparrows and European starlings. Because they are the aggressive descendants of foreign importations, these birds are often unwelcome at the feeders.

Our visitors besides introduced birds, are sometimes regarded as pests. Our native gray squirrel consumes large amounts of grain and gnaws into peanut butter sticks to get at the tempting ingredients within the holes, and white-footed mice, Norway rats and rabbits seek out the bird food that has fallen to the ground, often tunneling through the snow to reach it. Finally, there are those visitors not interested in the food that we have scattered, but rather in the animals that eat it. These are the predators—the bird-hawks, shrikes, and cats, which usually prey largely on those birds whose normal reactions are slowed, perhaps because of deformities, internal parasites, injuries of various kinds, or old age.

As the snow deepens, the struggle for existence becomes acute and the drama on the stage of our feeding station reaches an exciting pitch. The human tendency is to intervene, giving support to the weaker birds and restraining the aggressors.

Winter Problems At The Feeding Station

An experienced bird-bander brings common sense and a practical solution to a puzzling issue.

SHOULD WE INTERFERE?

Should we interfere, and try to control the kinds of birds and other animals that are attracted to our feeding stations? There are ways in which we can lessen and even prevent the successful competition of many so-called undesirable visitors, but we should first consider whether we wish to grant any animal special privileges to the exclusion of others. All creatures come to our feeders because they are hungry. They cannot understand that some of their kind are unwelcome and even were they able to comprehend the reasons for the antagonism against them, they would have strong and convincing arguments in their own defense. To arrive at a satisfactory conclusion, we should judge them biologically and ecologically, in their natural relationships to each other, rather than by human judgments of their conduct at the feeding stations. "Gluttonous," "cowardly," "bullying," and other names for certain kinds of animal behavior, as we see it, are terms utterly incomprehensible to a natural order that has decreed animals to compete with and prey upon one another for the good of all.

"The complaint against introduced birds . . . is that some of them have been too successful." English sparrows at feeding tray, photographed by C. P. Fox.





Certain other visitors to our feeders may be regarded as pests. Photograph of gray squirrel by C. P. Fox.

NATIVE VERSUS INTRODUCED BIRDS

Many people make a very strong distinction between native birds and introduced species. They refuse to recognize English sparrows, starlings and rock doves as legitimate birds, and do not mark them on their bird lists. Yet ring-necked pheasants, also foreigners, are usually welcomed at feeding stations, and a stray from Europe is considered the find of a lifetime on a bird trip. People also forget that during the post glacial era, a large percentage of the stock of our present birdlife originated in the Old World.

The real complaint against the introduced birds of recent origin, when we stop to think of it, is that some of them have been too successful. By sheer numbers they have tended to displace our own native birds. Individually they are no more "greedy" or "aggressive" than many of our familiar birds. I have seen single goldfinches and tree sparrows defend a feeding station against all other birds with as much vigor as a flock of starlings or English sparrows.

If they were only not so numerous we could consider starlings one of our most beneficial species. Even so the present large flocks, when concentrated upon a certain insect pest, can almost eliminate it locally. They have made spectacular inroads upon the devastating and prolific Japanese beetle. They are also useful scavengers and we can't help but admire their wonderful power of flight. The well-timed maneuvers of a flock seem almost uncanny in their precision.

English sparrows are not the barnyard parasites

that they used to be. With the marked decrease of their numbers in the Northeast, a good many people are expressing concern over their welfare. The English sparrow's improved reputation is largely due to its change in diet. Formerly grain-eating birds, they are becoming more and more omnivorous and eat a good many insect pests which our native birds overlook. I like their cheerful cheeping; they tend to attract other birds to feeding stations, and I have yet to find them overly assertive.

BLUE JAYS, COWBIRDS, GRACKLES AND SQUIRRELS

Some of our native birds such as cowbirds, blue jays and grackles have come into disrepute because of their so-called greedy habits. Actually I find these birds highly entertaining and among the most interesting visitors to my feeding station. They compete with other birds, but for the most part, it is a healthy competition and not to the detriment of any particular species. Blue jays warn other birds of the approach of cats and hawks, and during the winter they scatter particles of food upon the snow to the benefit of ground-feeding birds. Like squirrels they also plant many trees.

Speaking of squirrels, we have here one of the most controversial of the visitors to feeding stations. Many people are very fond of them, and find them just as interesting and attractive as avian visitors. Others heartily detest them, some choosing to kill them while others erect all sorts of impregnable feeding devices which will keep them away from food meant for birds. Conditions vary so in different parts of the country that it is hard for people in places where squirrels come in modest numbers to understand the distaste with which people regard squirrels in places where there is a virtual epidemic of them. Excess squirrel populations often stem from a lack of hunting, and the destruction of the predators that feed upon squirrels. Hawks of many kinds, and the rare pine marten of our North Woods, help to limit the squirrel population. In normal numbers, the gray squirrel (the species most commonly met with) is an attractive, useful animal, and a desired guest at the feeding station.

Generally with squirrels and with all the other contending visitors, the best way to prevent any one kind from gaining a monopoly at the feeding tray is to provide food in many different places. We can establish special feeders for the aggressive species, usually at some distance from the house. Whole corn and nuts will lure squirrels and blue jays to a place designated for them. Cracked corn will serve the same purpose with English sparrows. An especially belligerent mockingbird can be diverted with raisins. Closer to the house, or even upon our window sills, we can provide for the needs of more timid birds.*

* See "Let's Get Ready for Winter Feeding," Audubon Magazine, September-October 1949.

BIRDS OF PREY

The predatory birds that may constitute a problem in feeding songbirds are only a few—the northern shrike, the screech owl and the Cooper's and sharp-shinned hawks. My experience with the northern shrike and the above-mentioned hawks is that they very seldom succeed in taking a bird, particularly in the close quarters about homes where there are trees and shrubbery. They do their most effective hunting in open fields bordered by woodlands. In the open they can surprise large flocks of starlings, red-wings and English sparrows.

While banding birds one winter, I released a goldfinch from a banding trap. Almost immediately a northern shrike, which had been waiting nearby, darted after it. I lost sight of the two as they streaked across an open space toward the woods, but I did hear what sounded like a cry of anguish. I did not expect to see that goldfinch again, yet, several weeks later, when I compared the band numbers of birds I had taken during the day with those in my file, I discovered that this very same goldfinch had returned to my banding trap and was apparently in the best of health.

Screech owls escape notice because they hunt in the dark. The same may be said for foxes, skunks, opossums, raccoons and various other nocturnal animals. Such predators devour far more small birds about our homes than do the hawks and shrikes.

As we learn more about the interrelationships between animals we find that predators have an important place in the animal world. With no predation, the selective processes of evolution cease, and species degenerate as they do on small islands

lacking predators. Predators make for a healthy balance in numbers. They prevent animal populations from increasing beyond the limits of their food supply, and thus adversely affecting the whole natural structure of which they are a part.

On a few occasions I have found predatory birds a nuisance, not because of minor depredations, but because their presence kept birds away from feeders in time of severe weather. When this occurs I try to catch any lurking birds of prey in a banding trap and then transport them elsewhere. Shrikes sometimes dash into the first compartment of my banding traps in pursuit of a small bird safely enclosed in an inner compartment, which shrikes, being larger, cannot enter. These are banded and released some miles distant, the generally adopted method of dealing with predatory birds among banders. We do not kill any bird for all of them are useful. At the same time, banding may result in valuable information about the shrikes' longevity and distribution.

Banders are relatively few in number so that if the average feeding station operator finds predatory birds a nuisance, the wisest alternative is to put evergreen boughs and brush near the feeders so that the small birds will have ample cover. Blue jays invariably give warning of an approaching bird of prey so that by the time a hawk or shrike arrives, the yard is deserted.

DOGS AND CATS

What of animal pets, particularly those which obtain food and shelter from man, and only hunt to gratify an ancient urge, or because they are homeless? Dogs come under this heading, but their

"Shrikes sometimes dash into the first compartment of my banding traps in pursuit of small birds. . . . These are banded and released miles away." Photograph of author at a banding trap.





"Hawks and owls . . . are more likely to catch the crippled and diseased birds." Photograph of screech owl by Robert R. Knickmeyer.

ability to catch birds is so limited that we can discount them almost at once. Sometimes they will disturb birds through romping and barking, but this is usually of short duration.

Cats present a more serious problem for they are well equipped for catching birds. Their numbers are maintained artificially so that they do not decrease when their natural food supply decreases. They cause the most damage during the nesting season, but on the whole the number of birds they take is not excessive. Just as with hawks and owls, they are more likely to catch the crippled and diseased birds. I know of many people, with successful feeding stations, who own cats—and the ownership of one should not deter anyone from feeding birds. If cold and starvation can reduce the wintering bird population by as much as 90 per cent, predation by cats, in comparison, is negligible.

Scientific studies of winter predation prove that the same number of a species survive, regardless of whether there is predation or not. In other words, the percentage that fall victim to predators would not survive anyway, for they would die of starvation or from some other cause. The rate of survival depends upon the *carrying capacity of the land*, which is determined by the amount of wildlife food and shelter available. Predator control is fruitless, but sound management of the land reaps abundant reward. Applied to our own home grounds, this means we should concern ourselves with the proper selection of plants for bird food and shelter in our backyards.*

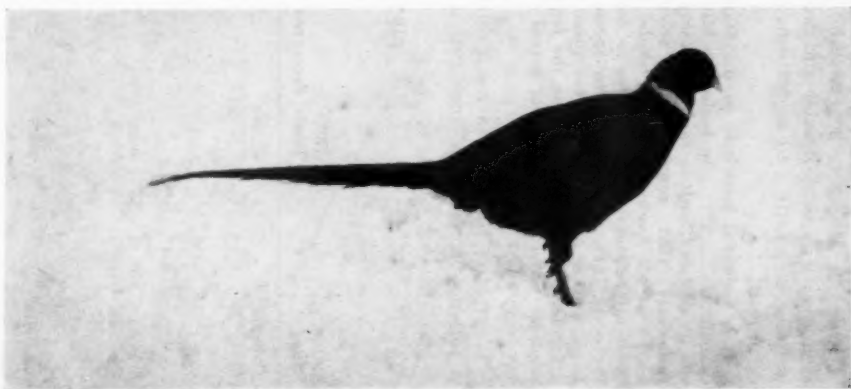
THE PROPER PERSPECTIVE

In the final analysis the problems we have with the guests at our feeders largely evaporate once we come to regard them in their proper perspective. Competition among wild creatures is normal and healthy. If we attempt to prevent it, we are trying to circumvent a process that has been going on for thousands of years and which has helped produce the many varied and splendid forms of life we have on the earth today.

Instead of approaching the problem with a shotgun or with impregnable feeding devices, we should approach it humbly, realizing that nature's ways are the best and that we cannot always mold everything to fit the pattern we desire. We can improve our feeding facilities through arranging food and feeders to meet the requirements of as many visitors as possible and we should be generous and tolerant hosts. If there is any breach of etiquette, let it not be on our part.

* See "More Birds for Your Garden," Audubon Magazine, July-August, 1949.

"Ring-necked pheasants . . . are usually welcomed at feeding stations." Photograph of ring-necked pheasant by Allan D. Cruickshank.



A FAIR DEAL FOR OUR BIRDS OF PREY?

Continued from Page 381

Audubon Magazine suggests the following as a possible model and would welcome comments and suggestions concerning it:

It is unlawful anywhere in the State of _____ to molest or kill any species of hawk, owl, or eagle, including the following: (list common and scientific names of all hawks, owls, and eagles that occur in the state), or to remove or destroy the nests, eggs, or young of any species of hawk, owl, or eagle; with the exception that a farmer may destroy those on the land he occupies when they are doing actual damage to poultry.

We realize that such a law probably would not prevent the continued indis-

criminate killing of many hawks, owls, and eagles. In fact it seems doubtful that anything except education can accomplish that objective. The above statute would make enforcement easier since it would rule out the excuse of roadside hunters that they "thought" they were shooting unprotected hawks. Also, it would give Audubon Societies and other organizations some legal backing for their scientifically proved assertion that there is no such thing as a "good" or "bad" species of hawk or owl, but rather that each has a role to perform in nature's economy; that no species of

hawk or owl is in itself "destructive" in its ecological function, but that individuals of any species may, for economic reasons, have to be destroyed if they develop a taste for poultry.

Persons who may wish to improve the laws protecting birds of prey in their states will find helpful suggestions in "Hawks and Owls Win in Minnesota," Audubon Magazine, July-August, 1945.

Our readers can also help by calling "A Fair Deal for our Birds of Prey?" to the attention of their newspaper editors, suggesting that they reprint it in whole, or in part.

FIFTY YEARS OF LEGISLATION FOR THE BIRDS OF PREY
(STATE LAWS IN 1899 COMPARED WITH 1949)

State	1899 Birds Protected	Unprotected	1949 Birds Protected	Unprotected	Protective Legislation Passed
Alabama	Shrike	sharp-shinned hawk, Cooper's hawk, duck hawk, pigeon hawk, barred owl, great horned owl	none	all birds of prey	
Arizona	none	all birds of prey	all except	great horned owl, Cooper's hawk, sharp-shinned hawk, osprey, goshawk	
Arkansas	none	all hawks, eagles, owls	none	all birds of prey	
California	none	all birds of prey	all except	great horned owl, sharp-shinned hawk, Cooper's hawk, duck hawk, shrikes	1935
Colorado	turkey buzzard	all other birds of prey	all except	sharp-shinned hawk, Cooper's hawk, goshawk, duck hawk	1939

Colorado	turkey buzzard	all other birds of prey	all except	1939
Connecticut	eagle	all other birds of prey	all except	1930
Delaware	none	hawks and owls	all except	
District of Columbia	turkey buzzard	all other birds of prey	all except	
Florida	none	all birds of prey	all except	
Georgia	none	all birds of prey	none	
Idaho	none	all birds of prey	none	
Illinois	wild birds	chicken hawks	all except	
Indiana	none	all birds of prey	all except	1935
Iowa	none	all birds of prey	all except	1924
Kansas	none	all birds of prey	all except	

Cooper's hawk,
duck hawk, shrikes

sharp-shinned hawk,
Cooper's hawk,
goshawk, duck hawk
great horned owl

great horned owl
snowy owl, hawks
(with exception of osprey)

turkey buzzard,
hawks (except
osprey). Bounty
on vultures is
authorized

Cooper's hawk,
sharp-shinned hawk,
great horned owl

sharp-shinned hawk,
Cooper's hawk,
goshawk, shrikes,
buzzard, great horned owl

all birds of prey

all birds of prey;
nighthawk, king-
fisher also unprotected

Cooper's hawk,
sharp-shinned hawk,
great horned owl

sharp-shinned hawk,
Cooper's hawk,
goshawk, great
horned owl

sharp-shinned hawk,
Cooper's hawk,
great horned owl

great horned owl,
sharp-shinned hawk,
Cooper's hawk,
goshawk

State	1899 Birds Protected	Unprotected	1949 Birds Protected	Unprotected	Protective Legislation Passed
Kentucky	none	all birds of prey	all except	great horned owl, sharp-shinned hawk, Cooper's hawk	
Louisiana	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, duck hawk, great horned owl	
Maine	none	all birds of prey	eagles	all hawks and owls	
Maryland	turkey buzzard	hawks and other birds destructive to poultry	eagles	all hawks and owls, shrikes	1947
Massachusetts	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, goshawk, great horned owl	first laws—1817 latest laws—1913
Michigan	none	butcher bird (shrikes)	eagles and osprey	all hawks and owls, shrikes	
Minnesota	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, goshawk, great horned owl	1945
Mississippi	none	hawks, owls and other birds of prey	all except	sharp-shinned hawk, Cooper's hawk, duck hawk, great horned owl	1932
Missouri	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, goshawk, great horned owl	1919
Montana	none	all birds of prey	all except	eagles, hawks, snowy owl, great gray owl, great horned owl	1947
Nebraska	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, goshawk	1929

State	None	all birds of prey	all except	owl, great gray owl, great horned owl sharp-shinned hawk, Cooper's hawk, goshawk	1929
Nevada	none	all birds of prey	eagle	all hawks and owls	
New Hampshire	bald eagle	all other birds of prey	golden and bald eagles	all hawks and owls, shrikes	1939
New Jersey	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, goshawk, great horned owl	1903
New Mexico	not yet admitted to statehood		none	all birds of prey	
New York	none	all birds of prey	broad-winged hawk, red-tailed hawk, sparrow hawk, red-shouldered hawk, rough-legged hawk, duck hawk, osprey, bald and golden eagles	snowy owl, great gray owl, short-eared owl, hawks other than those named	
North Carolina	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, great horned owl, buzzards	1935
North Dakota	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, great horned owl, snowy owl	1933
Ohio	mouse hawk, eagle	all other birds of prey	all protected except when found doing damage	none	
Oklahoma	turkey buzzard	all other birds of prey	bald eagle—only by federal regulation	all hawks and owls, shrikes	
Oregon	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, western goshawk, prairie falcon, duck hawk, great horned owl	1947

State	1899 Birds Protected	Unprotected	1949 Birds Protected	Unprotected	Protective Legislation Passed
Pennsylvania	shrike	sharp-shinned hawk, Cooper's hawk, duck hawk, pigeon hawk, barred owl, great horned owl	all except	sharp-shinned hawk, Cooper's hawk goshawk, great horned owl, snowy owl	1937
Rhode Island	fish hawk	hawks and owls	bald eagle and fish hawk	all hawks and owls, shrikes	1916
South Carolina	turkey buzzard	all hawks, eagles, owls,	all except	sharp-shinned hawk, Cooper's hawk, great horned owl, duck hawk, jaybirds, loggerheads, eagles, buzzards	1919
South Dakota	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, great horned owl	1907
Tennessee	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, great horned owl, blue jay	1937
Texas	buzzard	all other birds of prey	all except	sharp-shinned hawk, Cooper's hawk, goshawk, duck hawk, great horned owl, buzzards, golden eagle	1939
Utah	hawk, owl	all other birds of prey	all except	sharp-shinned hawk, Cooper's hawk, prairie falcon, goshawk	
Vermont	none	all birds of prey	all except	sharp-shinned hawk, Cooper's hawk, great horned owl, snowy owl, kingfisher	1912
Virginia	turkey buzzard	all other birds of prey	none	all birds of prey	
Washington	none	all birds of prey	all except	sharp-shinned hawk,	

Virginia Washington	turkey buzzard none	all other birds of prey all birds of prey	none all except	all birds of prey sharp-shinned hawk, Cooper's hawk, pigeon hawk, duck hawk, goshawk, prairie falcon, great horned owl	1947
West Virginia	turkey buzzard	all other birds of prey	all except	sharp-shinned hawk, Cooper's hawk, goshawk, great horned owl	1947
Wisconsin	none	all birds of prey	all except	great horned owl	1939
Wyoming	turkey buzzard	all other birds of prey	all except	sharp-shinned hawk, Cooper's hawk, duck hawk, goshawk, golden, brown and bald eagles, great horned owl	1939
Territory of Alaska	none	all birds of prey	bald eagle	all hawks and owls	1949 (July)

NATURE IN THE NEWS

Continued from page 373

lambs and antelope fawns. Over a period of years, photographers engaged in taking motion-pictures for Audubon Screen Tour audiences have watched many golden eagles at their nests.

"One pair of these eagles in a single day brought to their young no less than 22 ground squirrels, gophers, and jack rabbits—all animals which ranchers themselves would destroy as disease-carriers and for crop and grass protection. The only domestic or game animals brought to the eagle nests under observation were two mule-deer fawns, and those in an area where the large deer population was a serious problem for truck farmers.

"Analysis of the stomach contents of thousands of 'soaring' hawks has proved the importance of these birds as a control against field mice, rats, ground squirrels and other rodents, snakes and insects. The shooting of such hawks calls for no great display of marksmanship or intelligence. It is prohibited by law in more than 30 states. Bald eagles, which are largely scavengers and fish-eaters, are protected by Federal law."

• • •

Big Trumpeters Increasing

Trumpeter swans, which numbered a scant 73 in 1935, have chalked up another gain this year and there are now 451 of these big birds in the United States. While the threat of extermination has not yet ended, it has been growing less intense each year, and the long battle of the U. S. Fish and Wildlife Service to preserve the trumpeters appears to be nearing victory. Most of the birds are on the Red Rock Lakes Refuge of Montana, established in 1935. Since then, trumpeter swans have increased, and cygnets have been transplanted to Yellowstone National Park and to the National Elk Refuge. Oregon and Nevada refuges held about 27 birds when the breeding-ground survey was completed in August.

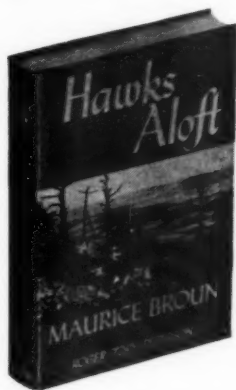
The trumpeter swan has several inherent characteristics that make its preservation difficult, long after destructive market hunting has been stopped. It is extremely sensitive to changes of habitat caused by civilization, and its large size makes it an easy target for the poacher and a prize of the pot hunter. Swans seldom breed until three years of age, and their breeding places now are few, a factor which tends to concentrate breeding birds in a few spots, making them vulnerable to climatic disasters. Transplanting programs of the Fish and Wildlife Service are aimed at minimizing effects of local drought or abnormally cold weather coinciding with nesting periods.

—Wildlife Management Institute,
Washington, D. C.

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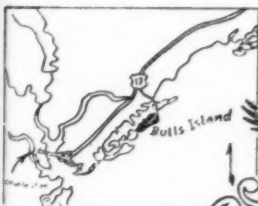
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Letters

We are proud of our far-off neighbors who become group affiliates of the National Audubon Society. To those affiliated with us in the Hawaiian Islands, Puerto Rico, Canada, and New South Wales, we now welcome the Witwatersrand Bird Club of Johannesburg, South Africa. Its attractive and interesting ornithological journal, "The Bokmakierie," and its periodical bulletins on sanctuaries and other conservation projects add interest and powerful editorial expression to conserving the natural resources for which your own Society stands. We wish them continued success, and the collective and individual satisfaction that comes to every organization and its members, vitally interested in wildlife and its preservation.

—John K. Terres.

"A Whooping Crane Named Bill"

In the July-August 1948 issue of *Audubon Magazine* you published the story of "A Whooping Crane Named Bill" written by the writer of this letter. The story created quite a lot of interest and attention in some quarters and was well received. I received a letter from the Commissioner of Wildlife of the State of North Dakota about it. I also received a letter from the head of the Biology Department of the Roosevelt High School of Seattle, Washington. He told me how glad he was to see it published in *Audubon Magazine* and he said for 12 years he had been using it in his classes and that it had thrilled thousands of pupils. He and the head of the Journalism Department wanted my permission to let them print it in the form of a small book or pamphlet, which permission I readily gave them. This party got hold of the story while here some 12 or 15 years ago. . . .

On October 7, I have been invited to be the guest of the Garden and Bird Club of Great Falls, Montana, and tell or read the story of Bill the Crane. They have a membership of around 300.

I am sure your Society and Mr. Robert P. Allen, in particular, will be glad to learn of all this and to know that we have awakened an interest in the importance of the protection of our wildlife.

S. W. OLIVER

Great Falls, Montana

Drouth and Woodcocks

On Sunday, June 26, 1949, at 7:30 A.M., I was surprised to see what at first appeared to be an oversized mourning dove facing me about 120 feet from the house, which is located in the southwestern part of Redding, Connecticut. Binoculars revealed it to be a woodcock. The bird was in a tri-

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angular section at the far end of our lawn. . . . Up until after five o'clock in the afternoon, three were clearly in sight out in the bright sunshine. One bird appeared to be older than the others and we assumed that the latter were this year's young fully grown. The birds would spend some time drilling and bringing up angleworms and then would retire like a line of ducks into the shade of the balsams for a bit, only to emerge again and work over a little more of the area. . . .

It seems likely that these were native birds reared on our place and that the continued drought and consequent drying out of their normal feeding grounds caused them to come out into the open in broad daylight in search of food.

REUBEN J. ROSS

Redding, Connecticut

Method for Opening Young Bird's Mouth

As I am a subscriber who reads everything in *Audubon Magazine*, I have been quite interested in your article, "Care and Feeding of Wild Birds," appearing in your May-June 1949 issue. May I offer my method of opening the mouth of any small or young bird, for forced feeding?

At the tip of the beak I gently insert the point of a nail file. Turning it sidewise opens the jaws. While this is being done the back of the bird's head is propped by the first finger of the hand that is holding it. With the jaws opened, I put the front of my thumb of the same hand against the mandibles—my thumb's curve preventing them from being closed until the food is inserted.

This method seems more gentle than forcing the jaws open by any other means.

D. B. WOTKINS

Troy, New York

New Nature Film Recommended

In viewing the 15-minute educational film, "The Boy and the Eagle," it is very obvious that here we have a director (William R. Lasky) and a young actor (Dickie Moore) who not only enjoyed making it, but who are also definitely interested in producing nature films.

We watch Dickie Moore tame a bald eagle which has an injured wing. When, through his help, the eagle can fly again, the boy realizes that he too is no longer limited physically.

The story unfolds against a background of the Malibu Hills, lying along the ocean, north of Los Angeles, California. It is a tribute to the photography and the excellent choice of setting to say that the scenic beauty of the chaparral-covered hills, the California haze, and the blue of the ocean and sky capture attention equally with the story.

The eagle, used in the film, was blown from a nest in Florida during a windstorm and has

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been in captivity 12 years. All details in the film have been carefully and sympathetically handled.

Mrs. RUTH McCUNE

Los Angeles Audubon Society,
Los Angeles, California

Evolution of a Bird-Watcher

Way back when just a youngster, my dad used to take me trout fishing along a stream in the beautiful hills of Pennsylvania. Many times I would hear the song of some bird, lay down my fishing pole not caring if I ever caught a fish, and wander off into the forest to see what new bird I might discover.

Later I became president of a Junior Audubon Society in our school. It was there that I first heard of *Bird-Lore* to which our club subscribed, and I never missed reading it from cover to cover.

Today I'm happy to be merit badge counselor for bird study in the Boy Scouts of America, a member of the National Audubon Society, and, what I think is even better, a subscriber and reader of the *Audubon Magazine*, which is more comprehensive than *Bird-Lore* and covers more topics on wildlife of America.

LEROY TUNSTALL

Wheaton Hill, Illinois

Pleased Subscriber

I am enjoying the *Audubon Magazine* and would not want to be without it.

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CORRECTION

Unfortunately, in "Northern Birds at a Costa Rican Feeding Station," September-October 1949 issue of *Audubon Magazine*, the captions under three different species of tropical birds were misplaced. The correct captions should be:

Page 281—"First to come to the table, and thereafter my constant guests, were the song tanagers."

Page 283—"I continue to wonder why the lovely and abundant blue-rumped green tanager passes my board without stopping to eat."

Page 284—Crimson-backed tanagers visited Frank M. Chapman's feeding station in a forest clearing on Barro Colorado Island, Panama Canal Zone.

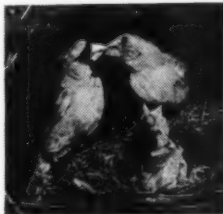
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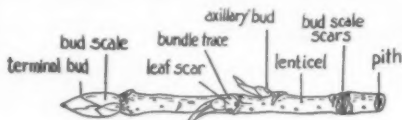
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Answers To Quiz on Page 367

1. Cygnets. The word is a diminutive from the French *cygne*, a swan.
2. Badger. The hair is also used for making fine painters' brushes.
3. Marsupials. Ungulates and herbivores are respectively the hoofed beasts and the vegetation-eaters. Trogons are birds of Central and South America.
4. Batrachians. Saurians are lizards, coleoptera are beetles, and arachnids are spiders.
5. About 25 years. The life-span has been extensively studied by authorities at the Tower of London, where the birds have congregated immemorably.
6. A whistle. Our common American marmot is *Marmota monax*, the woodchuck.
7. Carelessly made. Often the twigs and sticks are so casually put together that the eggs can be seen from underneath the nest.
8. Fifty tons. Giant specimens have been reckoned to weigh as much as 147 tons; but the usual weight is more likely to run between 30 and 60.
9. Bulls. The word for what lizards are is saurian. Remember back to question 4?
10. Blackbird. Meadowlarks are members of the *Icteridae*, the blackbird family. So are grackles, cowbirds, and orioles.
11. Two. The number of eggs laid by hummers, seldom varies.
12. The bobolink. Its breeding territory is in open fields of tall grass or reeds. The migratory flocks come down to rest and feed in such places.
13. Whistle. The gray-crowned leucosticte, or gray-crowned rosy-finch, is a restless western and northern bird of the mountainous regions. Its alarm call is a quick whistle.
14. Wake robin. The flowers presumably are so called because of their early appearance in the spring. It was in honor of the common white trillium that John Burroughs named his first book "Wake Robin."
15. Frogs. The spring peeper is our smallest tree frog, *Hyla crucifer*.
16. A method of reproduction by simple cell division, as in the paramecium.
17. An oak tree. Chlorophyll is the green coloring matter of plants.
18. Plumbago. This is the name for graphite, the mineral which takes its name from *grapho*, to write. Though it is often popularly known as "black lead," there is actually no lead even as an impurity in it.
19. Slow to mature. Birds that are wide awake and downy when hatched are called precocial.
20. A jaw. It's a *mandrill* that is the African baboon, and the plant used in early medicine and magic was mandrake or mandragora.

ABOUT THE AUTHORS

Louise de Kiriline (*Winter Birds at the Log-house*) operates the most northerly bird-banding station in the eastern part of our continent. In a previous article, "A Bird in the Hand," *Audubon Magazine*, September-October 1945, she told of her experiences in banding birds and followed this with "Least Flycatcher," *Audubon Magazine*, May-June 1948, and "Night Life at Peak Hill," July-August 1948, a story of a pair of whip-poor-wills. Louise de Kiriline will perhaps be best remembered for her beautiful, unprejudicial article, "Thus They Shall Perish," *Audubon Magazine*, January-February 1949.

• • •

Henry M. Harford (*Getting Closer to Birds*) is a doctor of dental surgery in Kansas City, Missouri. This is his first article for *Audubon Magazine*. In searching for recreation that would relax him from the tensions of dental practice, he once tried radio building and photography but found neither of them satisfactory. Birding seems to have answered his desire for a release from his everyday profession and he is an old hand at it. Dr. Harford says:

"My interest in birds began at the age of ten years. Alan Devoe's article, 'The Birds I Used to See,' (*Audubon Magazine*, March-April 1949) describes the situation admirably. One of my early ornithological discoveries was to find the supposed nest of a Harris's sparrow around Kansas City!

"Incidentally the cheap opera glass I had then, literally, gave me such a headache that I relied on the naked eye, plus stalking. It was years later that I discovered what good glasses can do for those who are too old, or too dignified, to crawl through the grass on their tummies!"

Dr. Harford uses a 9x35 Bausch & Lomb, coated lens, zephyr weight binocular.

George Dock, Jr.'s article, "What Field Glasses For Birds?" *Audubon Magazine*, September-October

1948, set forth the personal preferences of outstanding ornithologists for certain binoculars. Alexander Sprunt, Jr., and Allan Cruickshank prefer a 9x35; John Kieran uses an 8x30, Roger Tory Peterson a 12x50 and Guy Emerson's standby is a 7x35 binocular. Each selected a binocular that suited himself.

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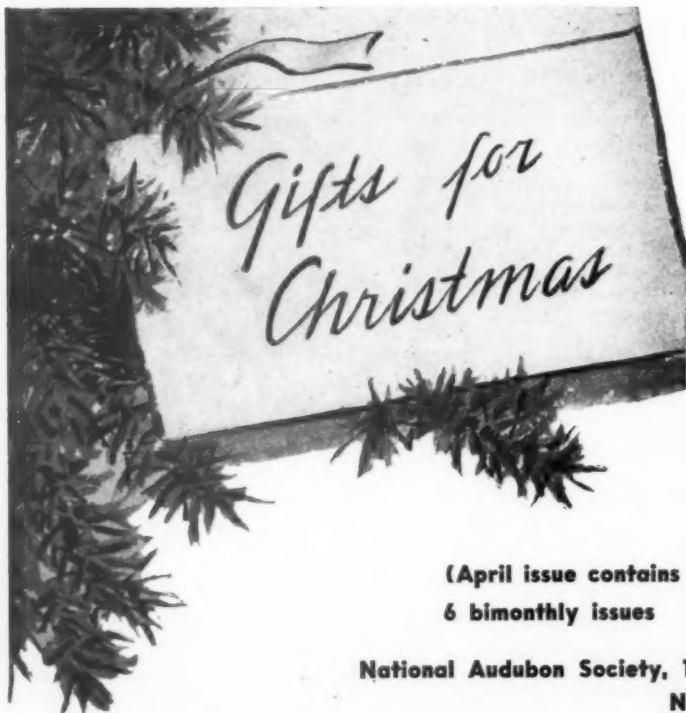
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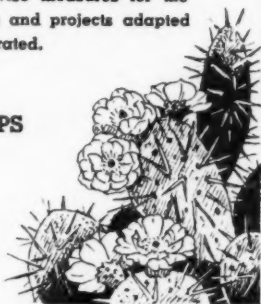
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